2Y-LINK Technology

Simplifies Installation of
High Quality CCTV System

Intelligent Model Signal Processor
User Manual

16 CHANNELS SIGNAL PROCESSOR CI-16-ASP-485

for transmission of Power, Video and Data(RS485)

with Built-in Power Pack

The package of 2Y-LINK Intelligent Model 16 Channels Signal Processor – CI-16-ASP-485 contents :

Product contents

- One 16 Channels Signal Processor Unit
- One power cord (US, British, or EU)
- Signal Processor User Manual

Note : This package is only one part of CCTV installation package, must work with the Associated Equipment for complete CCTV System.

Inspect the package and contents for visible damages. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

Installation Environment

Power : Ensure that the site's AC power is stable and within the rated voltage of the external power supply. If the site's AC power is likely to have spikes or power dips, use power line conditioning or an Uninterruptible Power Supply (UPS).

Ventilation : Install the unit in a well-ventilated area. Take note of the locations of the cooling vents in the unit enclosure, and ensure that they are not obstructed.

Temperature : Observe the unit's ambient temperature specifications when choosing a location space. Extremes of heat or cold beyond the specified operating temperatures limit may cause the unit to fail. Do not install the unit on top of other hot equipment.

Moisture : Do not expose the unit to rain or moisture. Moisture can damage the internal components. Do not install this unit near source of water.

Associated Equipment

Push-Fit Mixer
Pig-Tail Mixer
DB-4PF Distribution Board for Four Cameras with Push-Fit Terminal
DB-4RJ Distribution Board for Four Cameras with RJ45 Sockets
CC-1RJ Cable Converter for Push-Fit Mixer
CC-1PF Cable Converter with Push-Fit Terminals
CC-2PF Cable Converter with Push-Fit Terminals
PF-ISO Ground Loop Isolator with Push-Fit Terminals
PT-ISO Ground Loop Isolator with Pig-Tail cables
PS-10KU Power Stabilizer

For instructions regarding the connection of the associated equipment in your system, please consult the User Manual of the 2Y-LINK Intelligent Model 16 Channels Signal Processor – CI-16-ASP-485 contents.

Qualified Person to install this equipment

This is not a DIY product.

Qualified personnel who is able to handle DC48V equipment and experienced in installation of CCTV surveillance system is required.

WARNING : TO PREVENT FIRE OR SHOCK HARZARD, DO NOT CONNECT THE POWER CORD TO THE MAIN BEFORE CAREFULLY READ THE USER MANUAL

ATTENTION : Installation should only be performed by qualified personnel only in accordance with national Electrical Code or applicable local code.

POWER DISCONNECT : Unit with or without “ON-OFF” switches have power supplied to unit whenever the power cord is inserted into the power source. However, the unit is in operations only when the “ON-OFF” switch is in ”ON” position. Disconnect the power cord to main power source is the safe way to switch off the whole unit!

CAUTION : Do not try to open the case unless the power cord is disconnected with the main power source.

This equipment is for indoor uses. DO NOT install near the fire place or the place that the sun light can be directly reach.

2Y-LINK Intelligent Model Signal Processor
16 CHANNELS SIGNAL PROCESSOR CI-16-ASP-485

Contents

Chapter	Descriptions	Page No.
1	Introduction of *2Y-LINK* Technology	6-7
2	Features of 16 Channels Signal Processor CI-16-ASP-485	8
3	Specifications of Signal Processor CI-16-ASP-485 and Associated Mixers	9-10
4	Product Overview:	11-22
	4.1 Signal Processor CI-16-ASP-485	11-22
	4.2 Push-Fit and Pig-Tail Mixers	13
	4.3 Accessories for Easy of Installation	14-20
	4.4 Wiring Selection	21-22
5	Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for ***Power and Video*** Transmission	23-32
	5.1 For Power and Video Transmission USING CAT.5 CABLE (One Cat.5 Cable for four Cameras)	23-25
	5.2 For Power and Video Transmission *USING CAT.5 CABLE and IN COMBINATION WITH BELL CBLE* (One Cat.5 Cable for four Cameras)	26-28
	5.3 For Power and Video Transmission *USING CAT.5 CABLE* (One Cat.5 Cable for one Cameras)	29-30
	5.4 For Power and Video Transmission USING BELL CABLE	31-32
6	Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for ***Power, Video and Data (RS485)*** Transmission	33-39
	6.1 For Power, Video and Data Transmission *Using Cat.5 cable or in combination with bell cable*	34-36
	6.2 Transmission of Power, Video and Data for High Power PTZ Camera (power > 8 W) with Isolator *Using Cat.5 cable or in combination with bell cable*	37-39
7	Brightness / Sharpness (Colour) Switch Adjustment	40-44
8	How to mount the Signal Processor to 19" Rack	45
9	Trouble Shooting	46

Chapter 1 Introduction of *2Y-LINK Technology*

1.1 ***2Y-LINK Technology*** is a patented new concept, which has been successfully applied in the CCTV surveillance system with multi-functions, such as power, video, two-way audio, sensors, emergency signals and control data transmission, ***using a single pair of ordinary Bell Cable or an unshielded twisted pair of Cat.5 Cables between the Mixer at camera side to Signal Processor at DVR side.***

1.2 It consists of a **Mixer** installed close to the camera and a **Signal Processor** installed close to the DVR/Monitor. The transmission of power, video, two-way audio, sensors, emergency signals and control data between **Mixer** and **Signal Processor** is provided through a single pair of Bell Wires (AWG24-AWG18) or an unshielded twisted pair of Cat.5 Cable, for distance of up to 2,000 meter (6,600 ft.), depending on the choice of Signal Processor model together with the associated Mixer for the actual application in the CCTV surveillance system.

1.3 The **Signal Processor** supplies power and transmits control data and audio signals through the single pair of wires to the camera (applicable device) and at the same time receives, through the same single pair of wires, video and other signals continuously from the camera (applicable device) and channels them to the DVR/Monitor/applicable equipment.

1.4 The **Mixer** receives power and multifunctional data from the **Signal Processor** via the single pair of wires, regulates/stabilizes them and distributes them to the camera/applicable device and simultaneously transmits video and other signals back to the **Signal Processor**.

The following diagram shows examples of some typical applications of 2Y-LINK Technology in CCTV surveillance systems using just one pair of cable.

***2Y-LINK Technology* for Multi-functions with a single pair of ordinary wire**

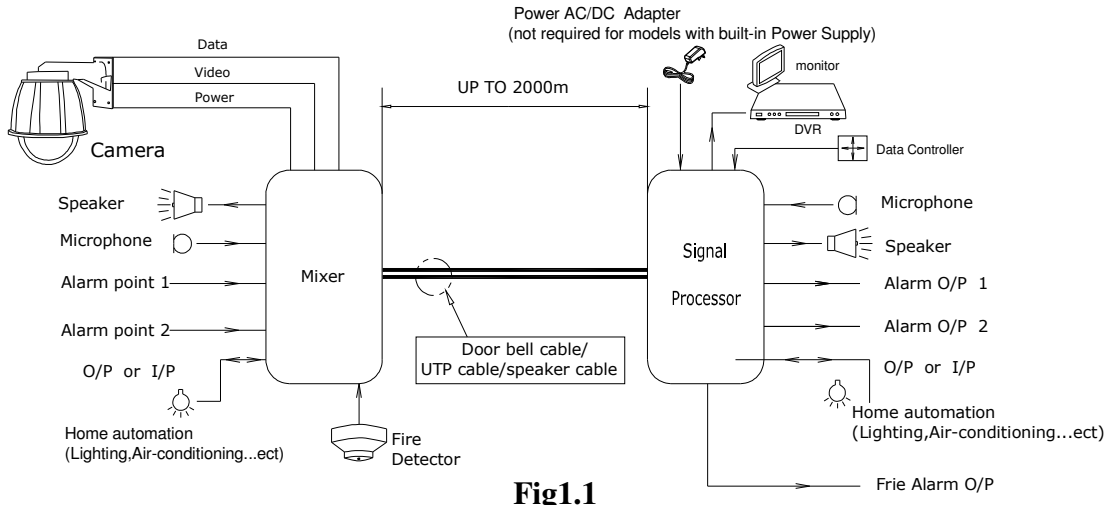


Fig1.1

Multi-functional Applications Control Station

Chapter 1 Introduction of *2Y-LINK Technology (continue)*

Wide range of cables can be used for CCTV system installation.

A. One Cat.5 unshielded cable can connect four cameras, without interference with each other
B. Bell cable/UTP cable from AWG24 to AWG 18 possible
C. Multi-core wire cable consists of several pairs of twisted or untwisted, shielded or unshielded cable, like telephone cable, can be used without interference with each other
D. Different cable types can be used in mixed combination to achieve easy installation and cost reduction
E. Commonly used wires and cables adopted by *2Y-LINK Technology* for multi-functional application is shown in Fig 1.2.

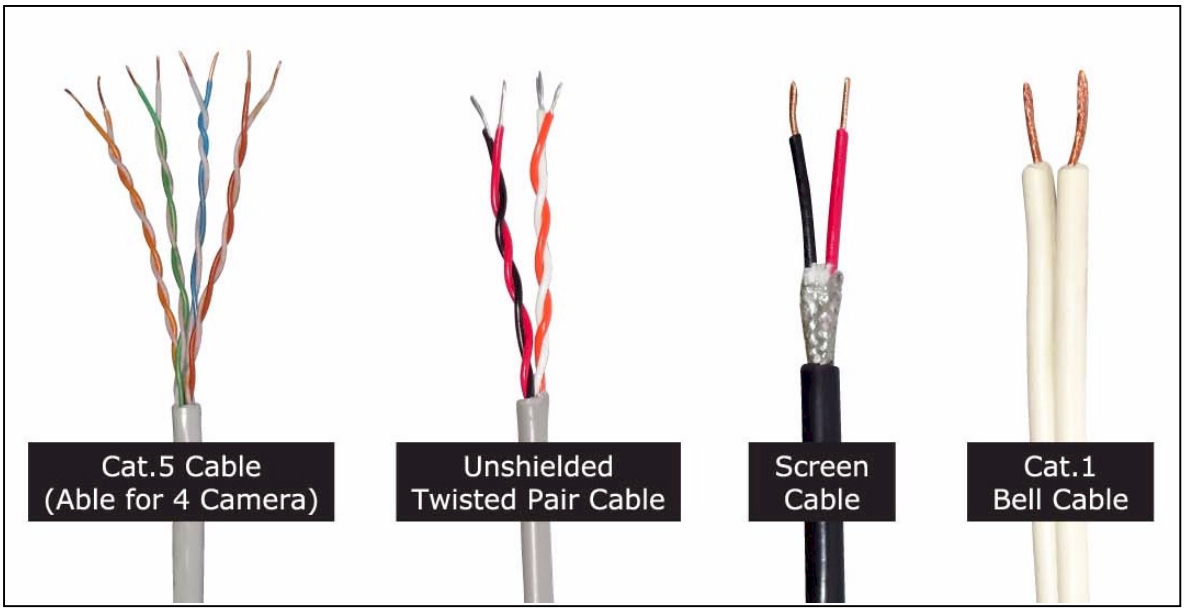


Fig.1.2

Chapter 2 Features of 16 Channels Signal Processor CI-16-ASP-485

1. Video and Power transmission over one pair of UTP Cable or one pair of Bell Cable up to 1.5KM (5,000ft).
2. No expensive coaxial cable is needed.
3. No AC-main power point and No AC/DC adapter are needed for each Camera.
4. One Cat.5 cable can transmit both Power and Video Signals for four different cameras.
5. Maintains high quality Video with excellent interference immunity.
6. With built-in auto adjustment circuitry for various cable lengths to maintain high quality Video Signals.
7. Much easier installation as compared with systems using coaxial cable.
8. Total cost savings of over 30% on installation as compared with other networking systems.
9. As the Signal Processor is equipped with a built-in automatic voltage adjustment system, there is no need to calculate the power line distance between the control centre and the camera.
10. The Signal Processor is also equipped with built-in automatic-reset fault protection and surge suppression protection for each channel, and the system is immunized from the ground-loop effect.
11. Compatible with 2Y-Link Push-Fit or Pig-Tail Mixers.
12. The 2Y-LINK Intelligent Model SIXTEEN Channels Signal Processor – Model No.CI-16-ASP-485 is also compatible with any DC 12V CCTV Camera up to 8W(680mA) with Video Output 1.0 Vpp 75 Ohm from any makers and produces equally high quality pictures.

Chapter 3 Specifications of CI-16-ASP-485 and associated Mixers

***2Y-LINK* - Two wires link up with Leeds Intelligent Model Signal Processor and Universal Mixers, and work well with different makers of CCTV cameras**

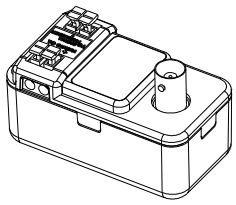
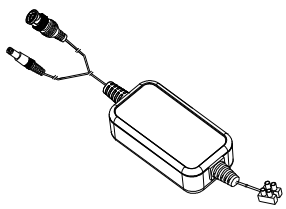
Specifications for Signal Processor CI-16-ASP-485

NO. of Channel	16 Channels
Each Channel Video Output	1.0 Vpp 75 ohm
Band Width	10MHZ
Max. Distance/Channel	Specified for different Mixer Models up to 1,500 m (5,000 ft.)
Each Channel connect port	Video Output to DVR/Monitor: BNC Plug Video/Power I/O: Front - RJ45 Sockets Back - Terminals Back – RJ45 Sockets (One Cat.5 cable for 4 cameras)
AC Power Main	AC 110V/60Hz,AC230V/50Hz
Operating Temperature	0^oC ~ $+40^oC$ / 32^oF ~ 104^oF
Operating Humidity	10~80%
Case/Weight	STEEL / 3.4kg(7.5 lb)
Dimensions	440mm(L)×280mm(W)×44mm(H) 17-5/16in.(L)×11in.(W)×1-3/4in(H)
Built-in Power Supply **(i) Maximum Power/Channel** **(ii) Total Power for 16 Channels**	 (680mA/DC12V) for one Camera (7,000mA/DC12V) for 16 Cameras

Fig. 3.1

Chapter 3 Specifications of CI-16-ASP-485 and associated Mixers (continue)

Specifications for Mixers

Video In (from camera)	1.0 Vpp 75 Ohm
Power Output for Camera (up to 8W)	DC 12V 680 mA or AC/DC 24V 340mA As specified for the respective Mixer Model listed below
Band Width	10 MHz
Max. distance	1,500m (5,000ft)
Connect Port	Video Input to Mixer: Push-Fit Model - BNC Plug Pig-Tail Model – BNC Socket Power Supply to Camera: Push-Fit Model-Terminal Pig-Tail Model-DC plug
Operating Temperature	-10°C ~ +50°C / 14°F ~ 122°F
Operating Humidity	10~95%
Case/Weight	Push-Fit Mixers: Plastic/92g (0.2 lb) Pig-Tail Mixers : Plastic/90g (0.2 lb)
Dimensions	Push-Fit Mixer : 65mm(L) × 35mm(W) ×32mm(H) $2\ ^{1}/_{2}$ in. (L) × $1\ ^{3}/_{8}$ in. (W) ×$1\ ^{1}/_{4}$ in. (H) Pig-Tail Mixer : 67mm(L) × 35mm(W) × 22mm(H) $2\ ^{5}/_{8}$ in.(L) × $1\ ^{3}/_{8}$ in. (W) ×$^{7}/_{8}$ in. (H)
Push-Fit Mixer Models: 	- **PF068A12** Mixer up to 500m(1650 ft.), DC 12V 680mA to camera) - **PF068B12** Mixer for 500-1,000m (1650-3,300 ft.), DC 12V 680mA to camera) - **PF068C12** Mixer for 1,000-1,500m (3,300-4950 ft.), Local Power to camera) - **PF068A24** Mixer up to 500m (1650 ft.), AC/DC 24V 340mA to camera) - **PF068B24** Mixer for 500-1,000m, (1650-3,300 ft.), AC/DC 24V 340mA to camera)
Pig-Tail Mixer Models 	- **PT068A12** Mixer up to 500m (1650 ft.), DC 12V 680mA to camera) - **PT068B12** Mixer for 500-1000m (1650-3,300 ft.), DC 12V 680mA to camera) - **PT068C12** Mixer for 1000-1500m (3,300-4950 ft.), Local Power to camera)

Chapter 4 Product Overview:

4.1 Signal Processor CI-16-ASP-485

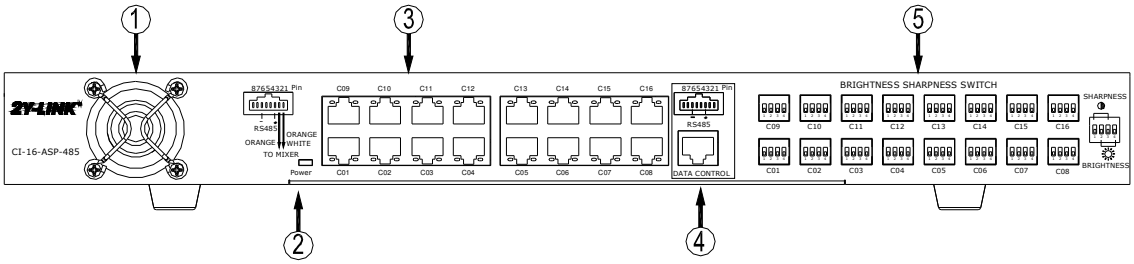


Fig. 4.1.1 Front View

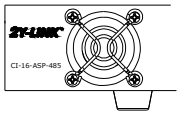
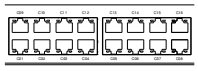
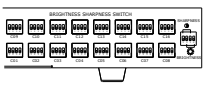
Item	Icon	Description	Usage or Purpose
①		Fan	For cooling the Power supply the signal processor.
②		Power LED Indicator	To indicate that the AC power switch is on and the power , fuse and AC power cord are in proper working order.
③		Video,Power,& DATA with Camera LED (RJ45 sockets)	For connections to Mixer for transmission of Power, Video and Data Signals using Cat.5 Cable.
④		RS485 Inlet (RJ45 Socket)	For connecting to Data Control unit with Cat.5 for controlling the movements of PTZ Camera at Mixer side
⑤		Brightness/Sharpness Switches	For adjusting the Brightness/Sharpness (Colour) of the images on the CCTV monitor

Fig. 4.1.2

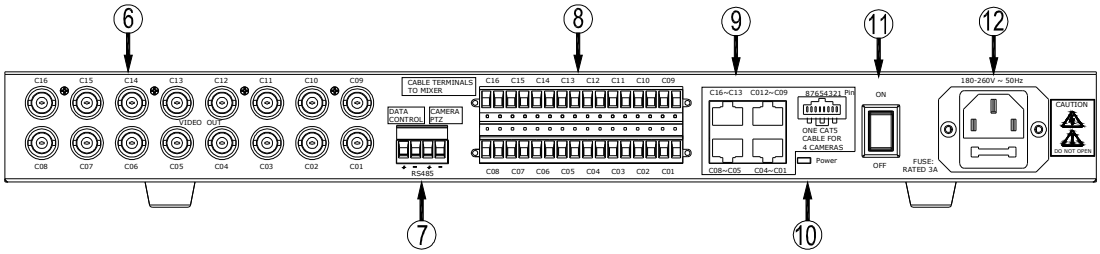


Fig. 4.1.3 BACK View

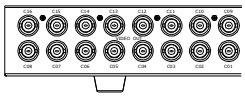
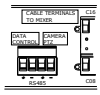
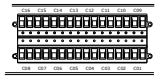
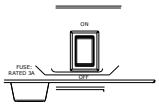
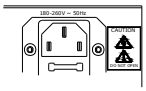
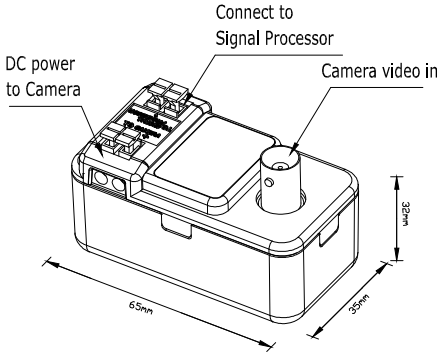
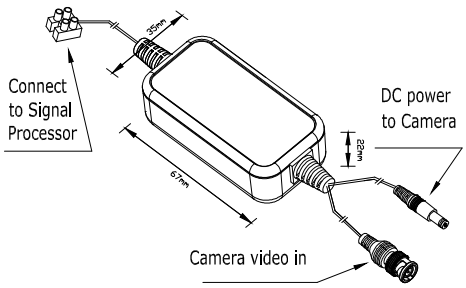
Item	Icon	Description	Usage or Purpose
⑥		Video Outlet (BNC plug)	For connecting to DVR or CCTV Monitor
⑦		RS485 from Data controller (I/O Terminals)	For connecting to Data Control unit with Bell Cable for controlling PTZ Camera at Mixer side
⑧		Video & Power (2-wire Terminals)	For connections to Mixers for transmission of Power, and Video using Bell Cable
⑨		Video & Power RJ45 Socket (4 Camera/per Socket)	For connections to 4 Mixers/Cameras for transmission of Power and Video with one Cat.5 Cable
⑩		Power LED Indicator	To indicate that the power switch is on and the AC power,fuse and AC power cord are in proper working condition
⑪		Power Switch	AC Power ON/OFF Switch
⑫		AC Power Socket with fuse	Connecting AC Power Cord to the Socket with built-in 5A Fuse

Fig. 4.1.4

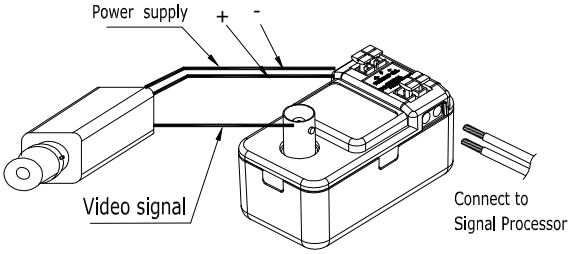
4.2 Push-Fit and Pig-Tail Mixers



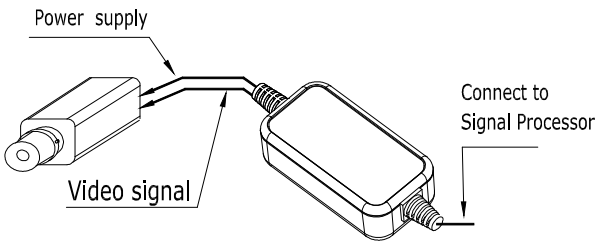
Push-Fit Mixer
Fig.4.2.1



Pig-Tail Mixer
Fig.4.2.2



Wiring connections of Push-Fit Mixer
Fig.4.2.3

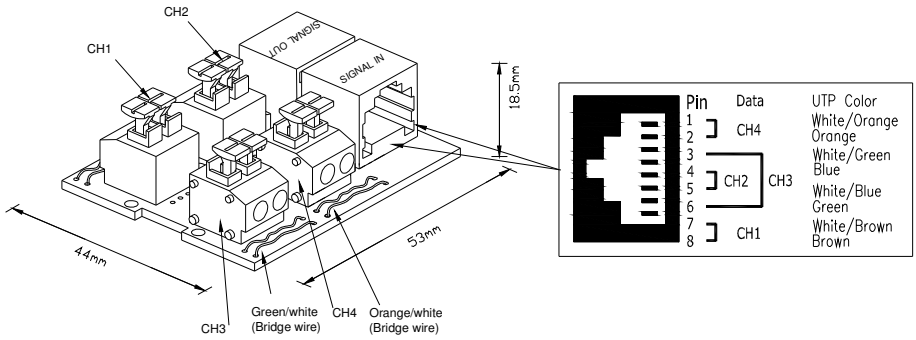


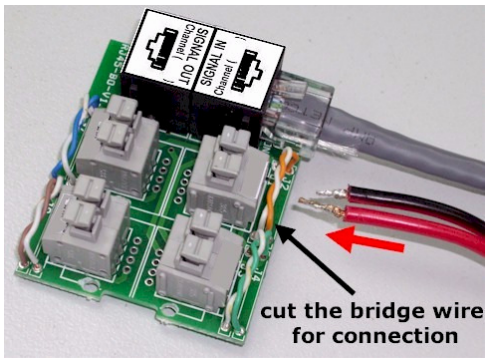
Wiring connections of Pig-Tail Mixer
Fig.4.2.4

Chapter 4 Product Overview: (continue)

4.3 Accessories for Easy of installation

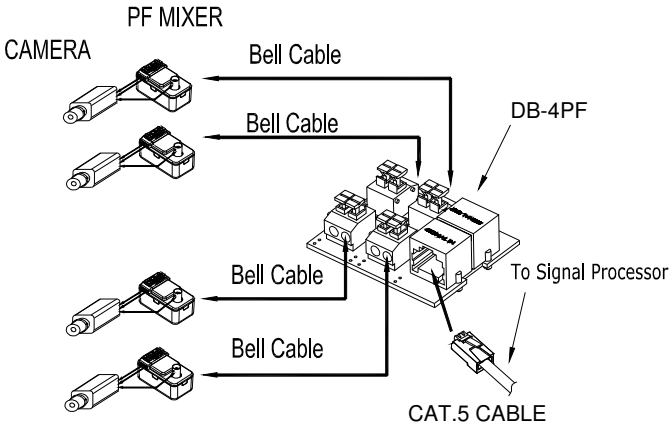
4.3.1 Camera Distribution Boards





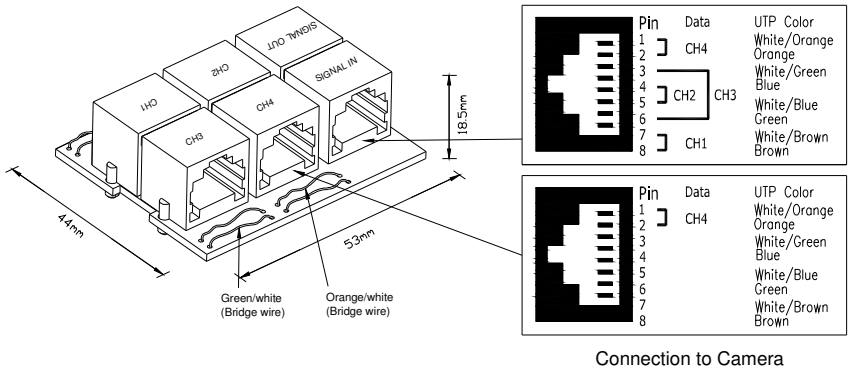
DB-4PF Distribution Board for four Cameras with Push-Fit Terminals

Fig. 4.3.1.1

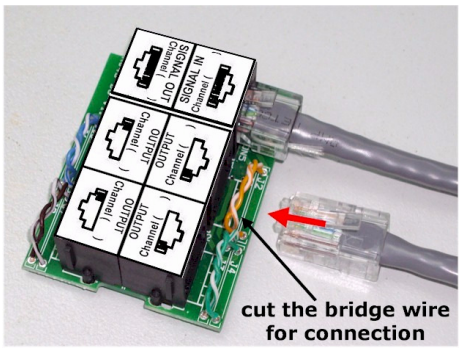


Wiring connections of DB-4PF Distribution Board for four Cameras with Push-Fit Terminals

Fig. 4.3.1.2

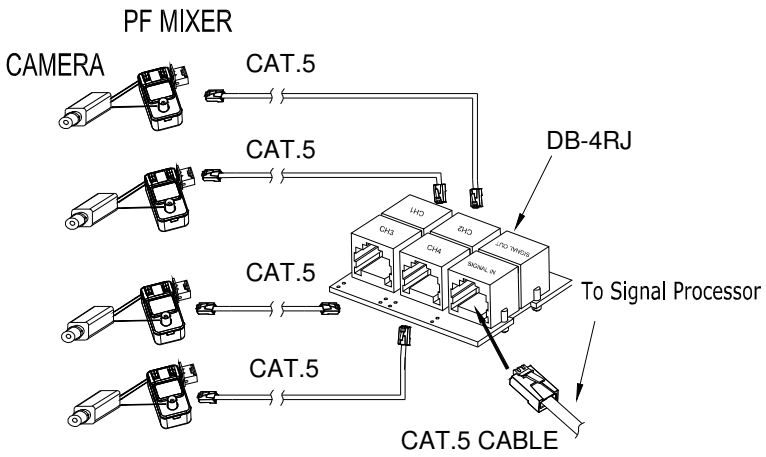


Connection to Camera



DB-4RJ Distribution Board for Four Cameras with RJ45 Sockets

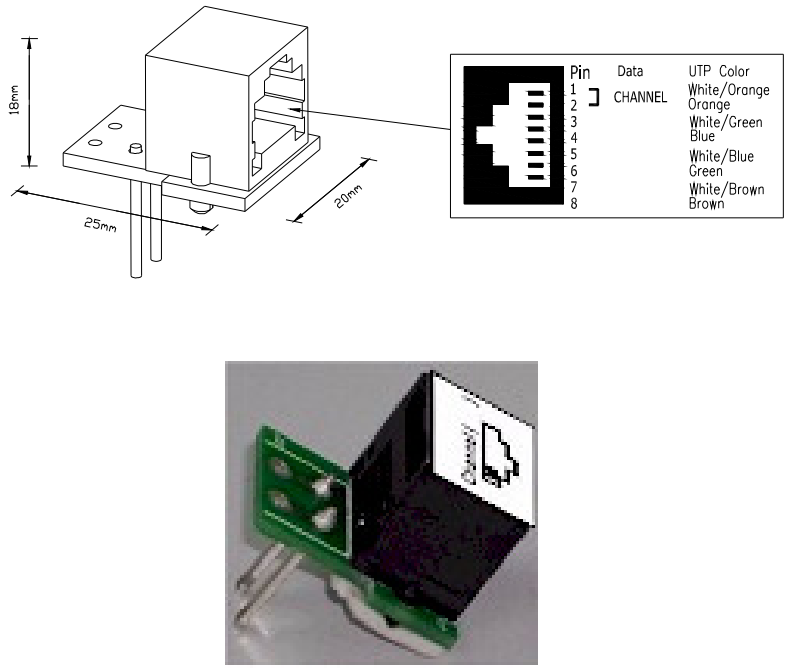
Fig. 4.3.1.3



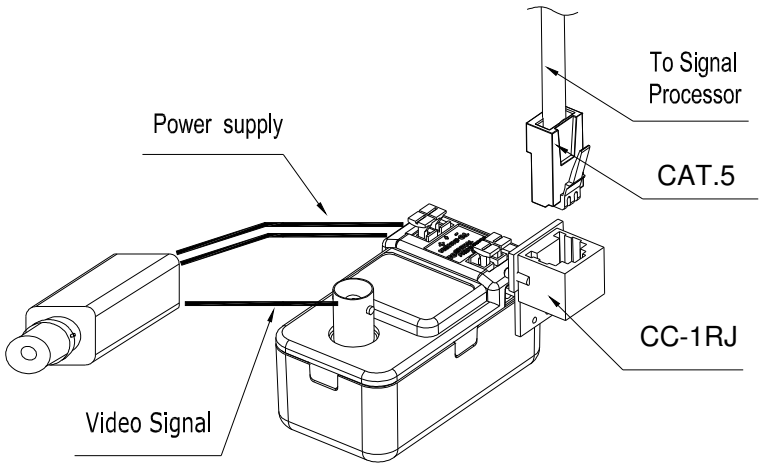
Wiring connections of DB-4RJ Distribution Board for Four Cameras with RJ45 Sockets

Fig. 4.3.1.4

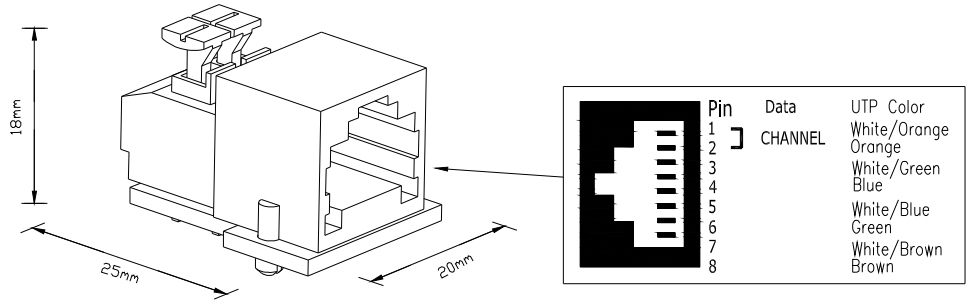
4.3.2 Cable Converters

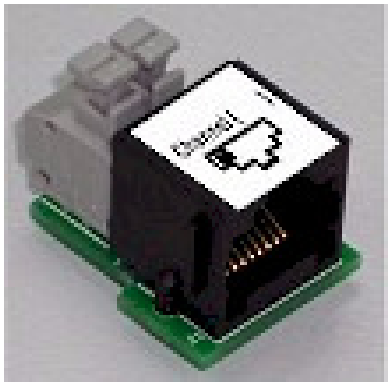


CC-1RJ Cable Converter for Mixer with Push-Fit Terminals
Fig. 4.3.2.1



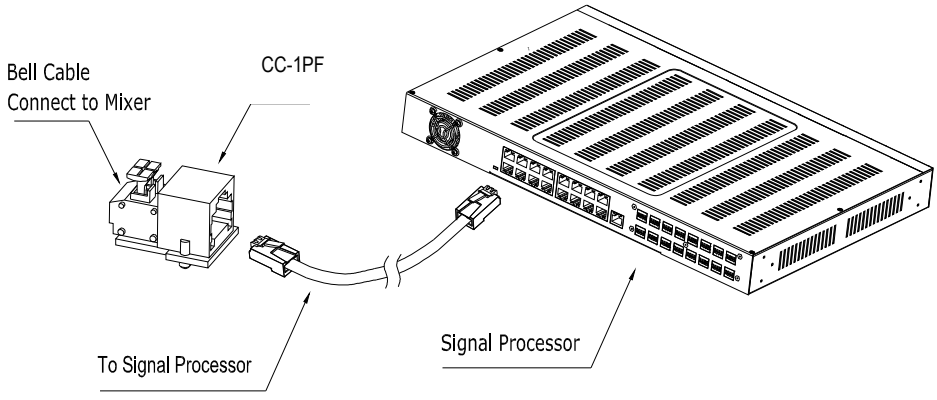
Wiring connections of CC-1RJ Cable Converter for Mixer with Push-Fit Terminals
Fig. 4.3.2.2





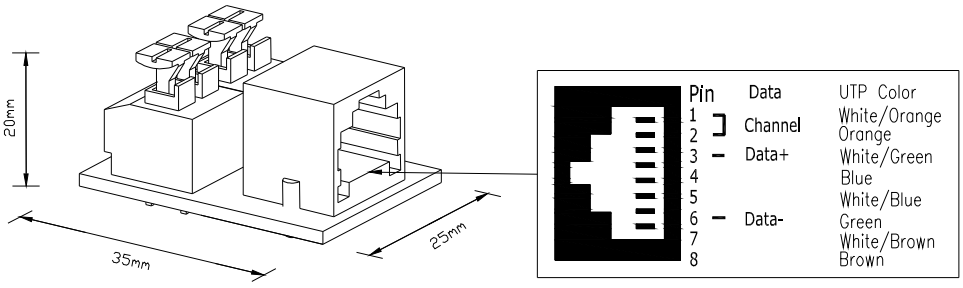
CC-1PF Cable Converter with Push-fit Terminals

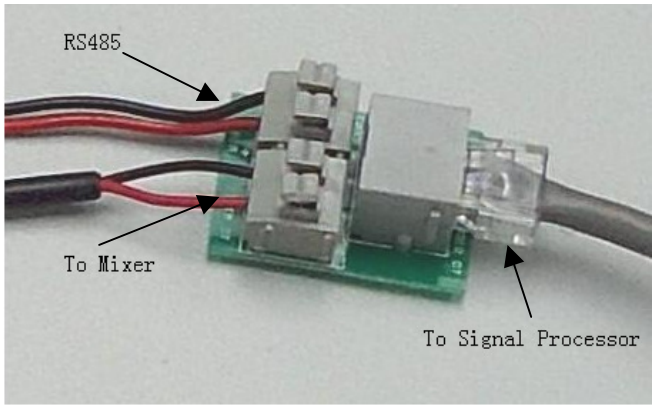
Fig. 4.3.2.3



Wiring connections of CC-1PF Cable Converter with Push-fit Terminals

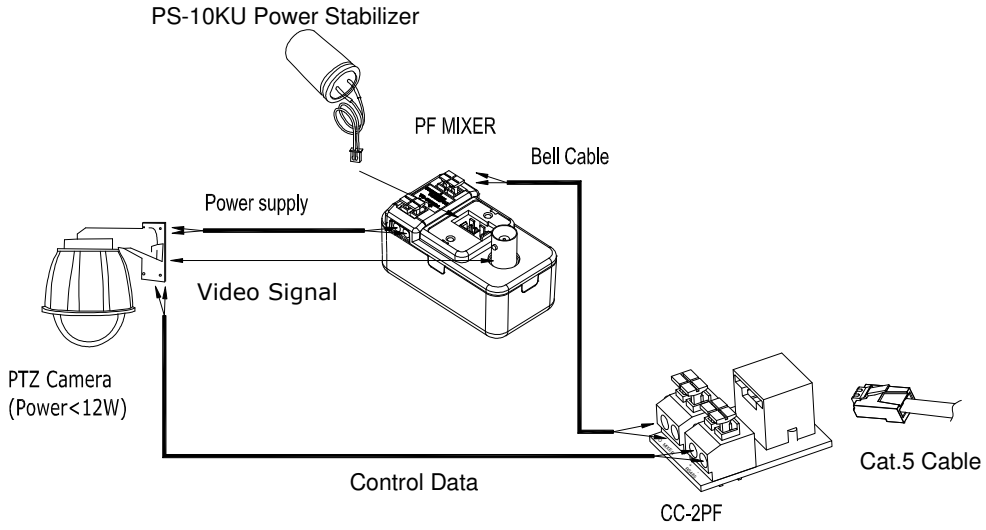
Fig. 4.3.2.4





CC-2PF Cable Converter with Push-fit Terminals

Fig. 4.3.2.5

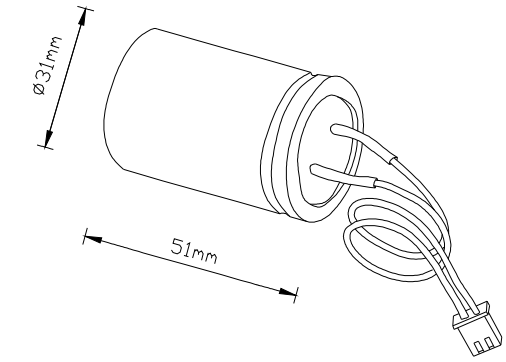


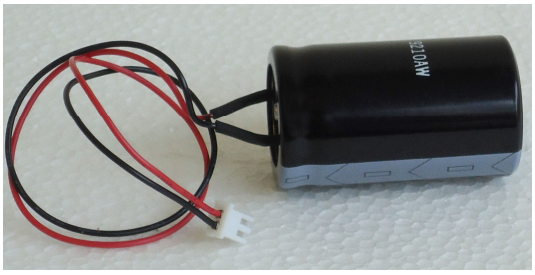
Wiring connections for CC-2PF Cable Converter with Push-fit Terminals

Fig. 4.3.2.6

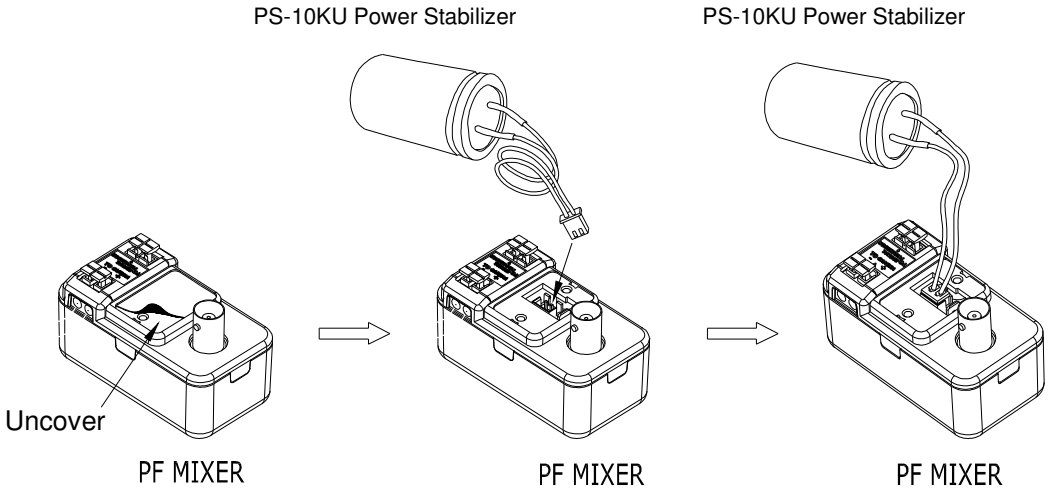
4.3.3 Power Stabilizer

For cameras with operation current up to 680mA, if those Cameras do not have stablising circuit feature for a suddenly light change from a bright environment to dark environment a PS-10KU power stabilizer is normally required.





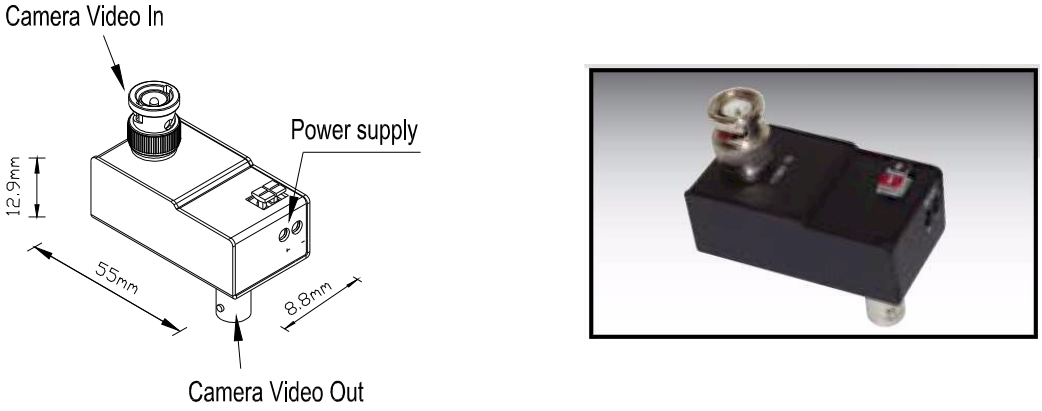
PS-10KU Power Stabilizer
Fig. 4.3.3.1



Wiring connections for PS -10KU Power stabilizer to PF-Mixer
Fig. 4.3.3.2

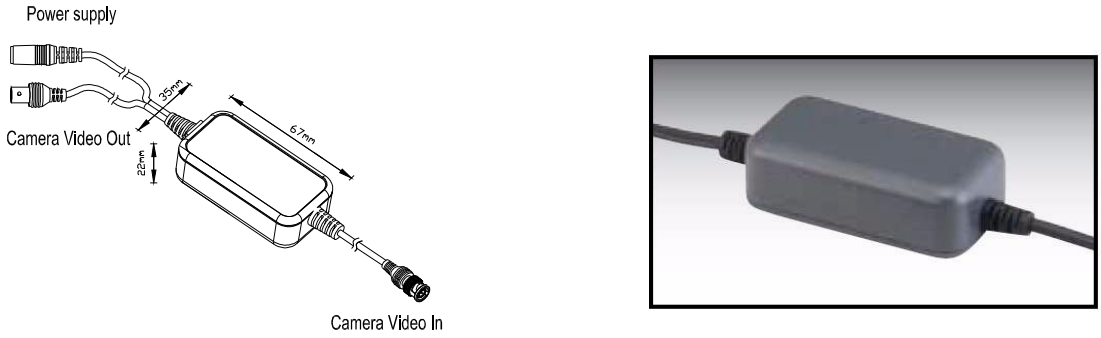
4.3.4 PF-ISO/PT-ISO Ground Loop Isolators

1. For camera power rating over 8W or exceed the power rating of the Signal Processor, local power supply for the camera is required.
2. If local power is supplied to the camera, the potential differences between the camera side and signal processor power point may occur and cause some moving horizontal lines on the CCTV monitor screen. If this happens, a Ground Loop Isolator (PF-ISO/PT-ISO) can be installed together with Mixer to eliminate the ground potential differences and improve the quality of images shown on the CCTV monitor screen.



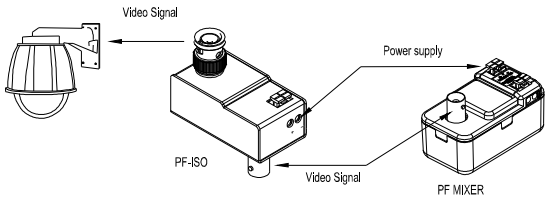
PF-ISO Ground Loop Isolator with Push-Fit Terminals

Fig. 4.3.4.1



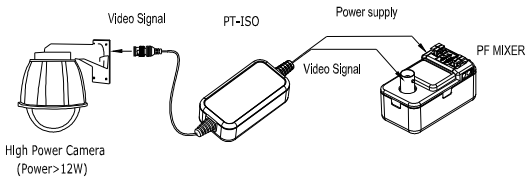
PT-ISO Ground Loop Isolator with Pig-Tail cables

Fig. 4.3.4.2



Wiring connections for PF-ISO Ground Loop Isolator with Push-Fit Terminals

Fig. 4.3.4.3



Wiring connections for PT-ISO Ground Loop Isolator with Pig-Tail cables

Fig. 4.3.4.4

4.4 Wiring Selection

- The following table shows the necessary wire gauge for twin bell wire over the expected length between camera and CCTV Monitor.

Camera Power / Mixer / Lenath / Wire Size	150 mA			
	12V		24V	
	PF068A12 PT068A12	**PF068B12 PT068B12**	**PF068A24**	**PF068B24**
AWG 20	≤500m ≤1640ft	500~1000m 1640~3280ft	≤500m ≤1640ft	500~1000m 1640~3280ft
CAT.5	≤500m ≤1640ft	500~700m 1640~2300ft	≤500m ≤1640ft	500~600m 1640~1970ft

Fig. 4.4.1

Camera Power / Mixer / Lenath / Wire Size	250 mA			
	12V		24V	
	PF068A12 PT068A12	**PF068B12 PT068B12**	**PF068A24**	**PF068B24**
AWG 20	≤500m ≤1640ft	500~1000m 1640~3280ft	≤500m ≤1640ft	--------
CAT.5	≤500m ≤1640ft	500~600m 1640~1970ft	≤200m ≤1640ft	--------

Fig. 4.4.2

Camera Power / Mixer / Lenath / Wire Size	350 mA			
	12V		24V	
	PF068A12 PT068A12	**PF068B12 PT068B12**	**PF068A24**	**PF068B24**
AWG 20	≤500m ≤1640ft	500~800m 1640~2620ft	≤200m ≤660ft	--------
CAT.5	≤400m ≤1310ft	--------	≤100m ≤330ft	--------

Fig.4.4.3

Camera Power / Mixer / Length / Wire Size	450 mA			
	12V		24V	
	PF068A12 **PT068A12**	**PF068B12** **PT068B12**	**PF068A24**	**PF068B24**
AWG 20	≤500m ≤1640ft	500m---600m 1640ft---1970ft	≤50m ≤160ft	--------
CAT.5	≤200m ≤660ft	--------	--------	--------

Fig.4.4.4

Camera Power / Mixer / Length / Wire Size	680 mA	Local Power for Camera (See page 20 – Section 4.3.4 : Note 1 & 2)				
	12V	12V			24V	
	PF068A12 **PT068A12**	**PF068A12** **PT068A12**	**PF068B12** **PT068B12**	**PF068C12** **PT068C12**	**PF068A24**	**PF068B24**
AWG 20	≤200m ≤660ft	≤500m ≤1640ft	500~900m 1640~2950ft	900~1200m 2952~3940ft	≤500m ≤1640ft	500~1000m 1640~3280ft
CAT.5	≤100m ≤330ft	≤500m ≤1640ft	500~900m 1640~2950ft	900~1500m 2950~4920ft	≤500m ≤1640ft	500~1000m 1640~3280ft

Fig.4.4.5

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission

5.1 For Power and Video Transmission *USING CAT.5 CABLE* (One Cat.5 Cable for four Cameras)

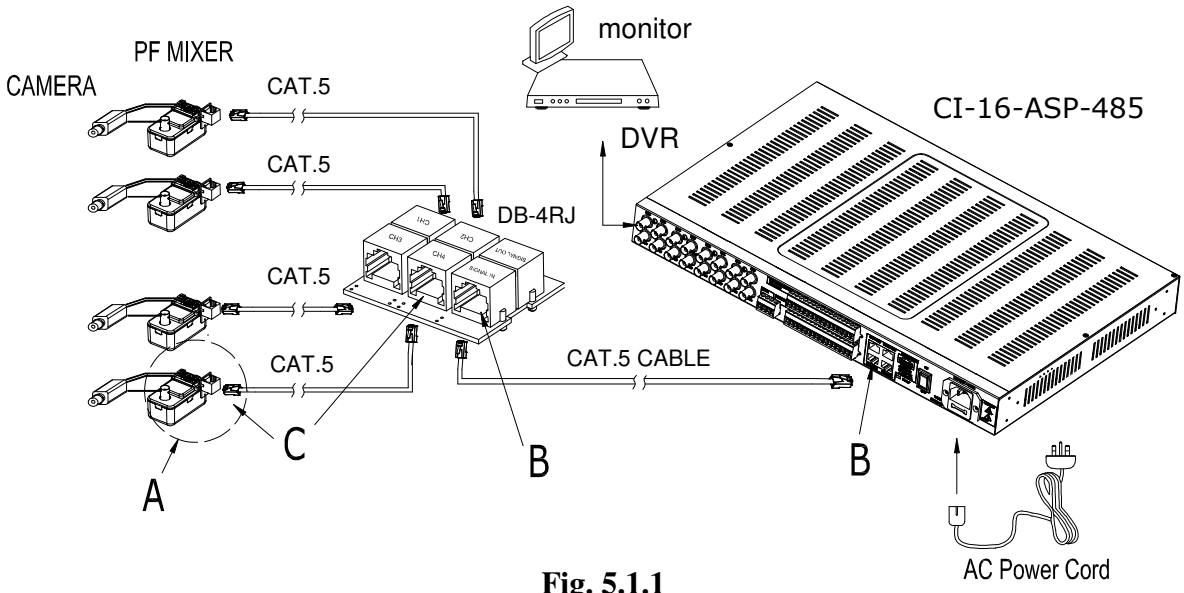


Fig. 5.1.1

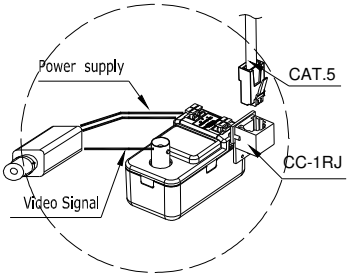


Fig. 5.1.2

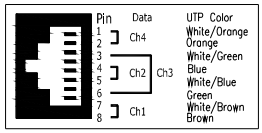


Fig. 5.1.3

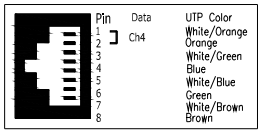


Fig. 5.1.4

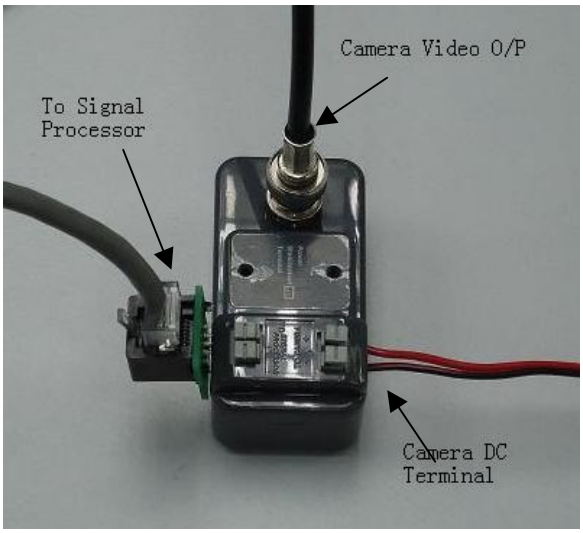


Fig. 5.1.5 Push-Fit Mixer

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

Wiring Connections for channels 1 to 4:

1. One end of the four pairs colour coded wires in each of the Cat.5 cable connects to a RJ45 plug as shown in Fig. 5.1.3 and plugged into the corresponding Video and Power RJ45 Sockets, Item ⑨ in Fig. 4.1.3 (on Page 12) of the Signal Processor as shown at B of Fig. 5.1.1.

2. The other end of the Cat.5 cable connect to a RJ45 Plug similarly as mentioned in paragraph 1 above and plugged into "SIGNAL IN" RJ45 Socket of the DB-4RJ Distribution Board for four Cameras with RJ45 Sockets as shown at B of Fig. 5.1.1, which is located at a suitable location for further connection to the corresponding Mixers and Cameras in various directions.

Descriptions and method of connections to the DB-4RJ Distribution Board for four Cameras with RJ45 Sockets

3. Descriptions and method of connections to the DB-4RJ Distribution Board for four Cameras with RJ45 Sockets are as follows:
   (1) The Distribution Board is fitted with six RJ45 Sockets;
   (2) The RJ45 Socket marked "SIGNAL IN" is for inlet of the RJ45 Plug mentioned in paragraph 2 above;
   (3) The RJ45 Socket marked "SIGNAL OUT" is for inlet of the RJ45 Plug from other Distribution Board, which is used to locate camera in another surveillance areas;
   (4) The other four RJ45 Sockets marked "CH 1", "CH 2", CH 3" and "CH 4" are for connections to four individual Mixers and Cameras using one Cat.5 Cable for each channel. For each such connection, one end of the corresponding colour coded *white/orange* and *orange* pair of Cat.5 wire is connected to only Pin1 and Pin2 of a RJ45 Plug respectively, as shown in Fig. 5.1.4 (for transmission of Power and Video), and plugged into the corresponding (CH1/CH2/CH3/CH4) RJ45 Socket of the "DB-4RJ Distribution Board for four Cameras with RJ45 Sockets" as shown at C of Fig. 5.1.1. (Please note that the bridge wires located in front of the RJ45 Sockets have to be cut for connecting the circuit);
   (5) The other end of the same pair of Cat.5 wire is also connected to only Pin1 and Pin 2 of a RJ45 Plug and plugged into the RJ45 Socket of the "CC-1RJ Cable Converter for RJ45", which is then plugged into the Push-Fit Mixer as shown at A of Fig.5.1.1, in Fig. 5.1.2 and Fig. 5.1.5;

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

(6) A short length of bell cable is connected between the "DC Power to Camera" Push-Fit Terminals and the Camera, while a short length of suitable cable is connected between the BNC Plug of the Push-Fit Mixer and the Camera as shown at A of Fig. 5.1.1 and in Fig. 5.1.2.

Wiring Connection for other channels:

4. The wiring connections for channels 5 to 8, 9 to 12, and 13 to 16 are connected similarly as described in paragraphs 1 to 3 above.

Description of the Power Supply and Transmission of Video Signals:

5. With the wiring connection described above, the Power Supply is provided from the Built-in Power pack in the Signal Processor through the Cat.5 wires via the Distribution Board with RJ45 Sockets and Cat.5 wires to the CC-1RJ Cable Converter and Mixers, and then to the Cameras. The Video Signals are transmitted from the Cameras via the Mixers and CC-1RJ Cable Converter through the same pair of Cat.5 wires to the Signal Processor, and then through the corresponding Video Output - BNC Plugs ⑥ in Fig. 4-1.3 (on Page 12) for further connection to the DVR/Monitor as shown in Fig. 5.1.1.

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

5.2 For Power and Video Transmission *USING CAT.5 CABLE and IN COMBINATION WITH BELL CABLE* (One Cat.5 Cable for four Cameras)

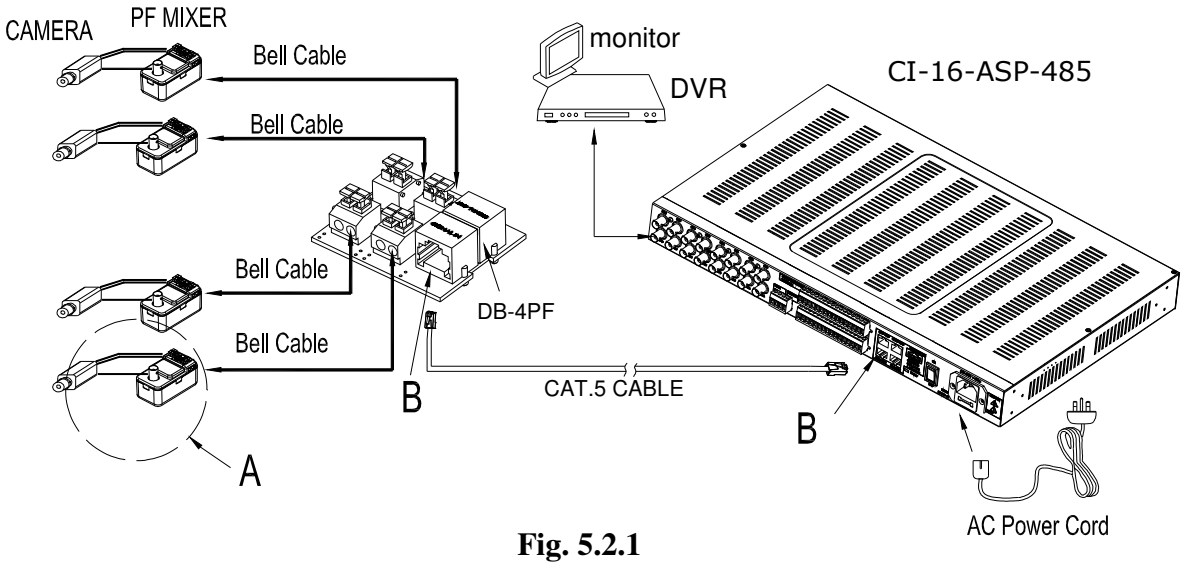


Fig. 5.2.1

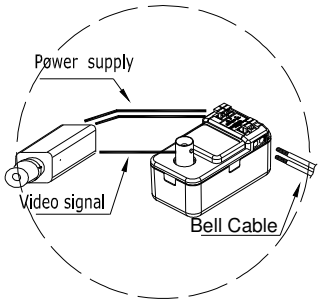


Fig. 5.2.2

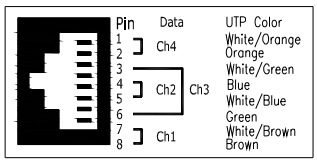


Fig. 5.2.3

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

Wiring Connections for channels 1 to 4:

1. One end of the four pairs colour coded wires in each of the Cat.5 cable connects to a RJ45 Plug as shown in Fig. 5.2.3 and plugged into the corresponding Video and Power RJ45 Sockets, ⑨ in Fig. 4.1.3 (on Page 12) of the Signal Processor as shown at B of Fig. 5.2.1.

2. The other end of the Cat.5 cable connects to a RJ45 Plug similarly as mentioned in paragraph 1 above and plugged into "SIGNAL IN" RJ45 Socket of the DB-4PF Distribution Board for four Cameras with Push-Fit Terminals as shown at B of Fig. 5.2.1, which is located at a suitable location for further connection to the corresponding Mixers and Cameras in various directions.

Description and method of connections to the DB-4PF Distribution Board for four Cameras with Push-Fit Terminals

3. Description and method of connections to the DB-4PF Distribution Board for four Cameras with Push-Fit Terminals are as follows:
   (1). The Distribution Board is fitted with two RJ45 Sockets and four Push-Fit Terminals;
   (2) The RJ45 Socket marked "SIGNAL IN" is for inlet of the RJ45 Plug as mentioned in paragraph 2 above;
   (3) The RJ45 Socket marked "SIGNAL OUT" is for inlet of the RJ45 Plug from other Distribution Board, which is used to locate camera in another surveillance areas;
   (4) The four Push-Fit Terminals marked "CH 1", "CH 2", CH 3" and "CH 4" are for connection to four individual Mixers and Cameras each using one pair of bell cable . For each such connection, one end of the bell cable is connected to the corresponding Push-Fit Terminals as shown in Fig. 5.2.1. (Please note that the bridge wires located in front of the Push-Fit Terminals have to be cut for connecting the circuit);
   (5) The other end of the same bell cable is connected to the corresponding Push-Fit Terminals of the Push-Fit Mixer marked "Connect to Signal Processor" at the Camera end as shown at Fig. 5.2.2;
   (6) A short length of bell cable is connected between the "DC Power to Camera" Push-Fit Terminals and the Camera, while a short length of suitable cable is connected between the BNC Plug of the Push-Fit Mixer and the Camera as shown at A of Fig. 5.2.1 and in Fig. 5.2.2.

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Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

Wiring Connection for other channels:

4. The wiring connections for channels 5 to 8, 9 to 12, and 13 to 16 are connected similarly as described in paragraphs 1 to 3 above.

Description of the Power Supply and Transmission of Video Signals:

5. With the wiring connections described above, the Power Supply is provided from the Built-in Power pack in the Signal Processor through the Cat.5 wires via the Distribution Board with Push-fit Terminals and bell cables to the Mixers and then to the Cameras. The Video Signals are transmitted from the Cameras via the Mixers through the same pair of bell cables and same pairs of Cat.5 cables to the Signal Processor, and then through the corresponding Video Outlet - BNC Plugs, ⑥ in Fig. 4.1.3 (on Page 12) for further connection to the DVR/Monitor as shown in Fig. 5.2.1.

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

5.3 For Power and Video Transmission *USING CAT.5 CABLE* (One Cat.5 Cable for one Cameras)

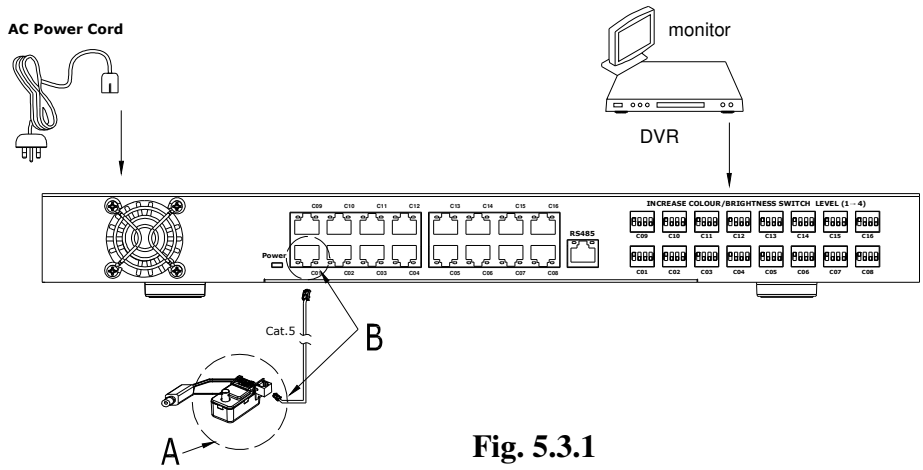


Fig. 5.3.1

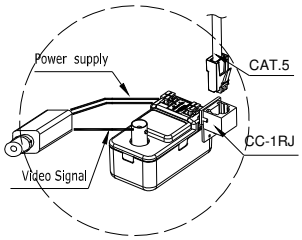


Fig. 5.3.2

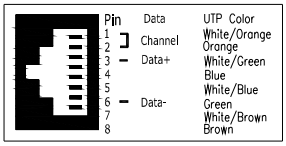


Fig. 5.3.3

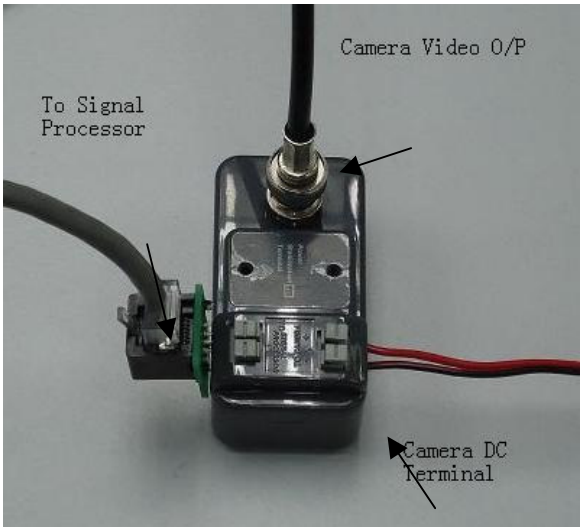


Fig. 5.3.4 Push-Fit Mixer

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

Wiring Connections for each channels

1. One end of the Cat5 cable is connected to the RJ45 plug with one pair of the colour coded Cat.5 wire white/orange and orange connected to Pins 1 and 2 respectively (for transmission of Power and Video), and another pair of the colour coded Cat.5 wire white/green and green connected to Pin 3 and Pin 6 respectively (for transmission of Data) as shown in Fig. 5.3.3, and plugged into the corresponding RJ45 sockets, ③ in Fig. 4.1.1 (on Page 11) of the Signal Processor, as shown at B of Fig. 5.3.1.

   (Please note that there is no immediate need for connections to Pin 3 and Pin 6 of the RJ45 Plug, as there is no Data to be transmitted for the present application. However, to provide such connections now would make the system readily available for addition function of Data Transmission when such need arises in future.)

2. At the other end of the same Cat.5 cable, the corresponding pairs of the matched colour Cat.5 wires for transmission of Power and Video, and Data are similarly connected to a RJ45 Plug mentioned in paragraph 1 above and plugged into the RJ45 Socket of the "CC-1RJ Cable Converter for RJ45", which is then plugged into the Push-Fit Mixer as shown at A of Fig. 5.3.1, in Fig. 5.3.2 and in Fig. 5.3.4.

3. A short length of bell cable is connected between the "DC Power to Camera" Push-Fit Terminals of the Push-Fit Mixer and the Camera, while a short length of suitable cable is connected between the BNC Plug of the Push-Fit Mixer and the Camera as shown at A of Fig. 5.3.1 and in Fig. 5.3.2.

Wiring Connection for other channels:

4. The wirings for other 15 channels are connected similarly as described in paragraph 1 to 3 above.

Description of the Power Supply and Transmission of Video Signals:

5. With the wiring connections described above, the Power Supply is provided from the Built-in Power pack in the Signal Processor through the Cat.5 wire via the Cable Converter and Mixer to the Camera. The Video Signals are transmitted from the Camera via the Mixer and Cable Converter through the same pair of Cat.5 wires to the Signal Processor, and then through the corresponding Video Outlet – BNC Plugs, ⑥ in Fig. 4.1.3 (on Page 12) for further connection to the DVR/Monitor as shown in Fig. 5.3.1.

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

5.4 For Power and Video Transmission *USING BELL CABLE*

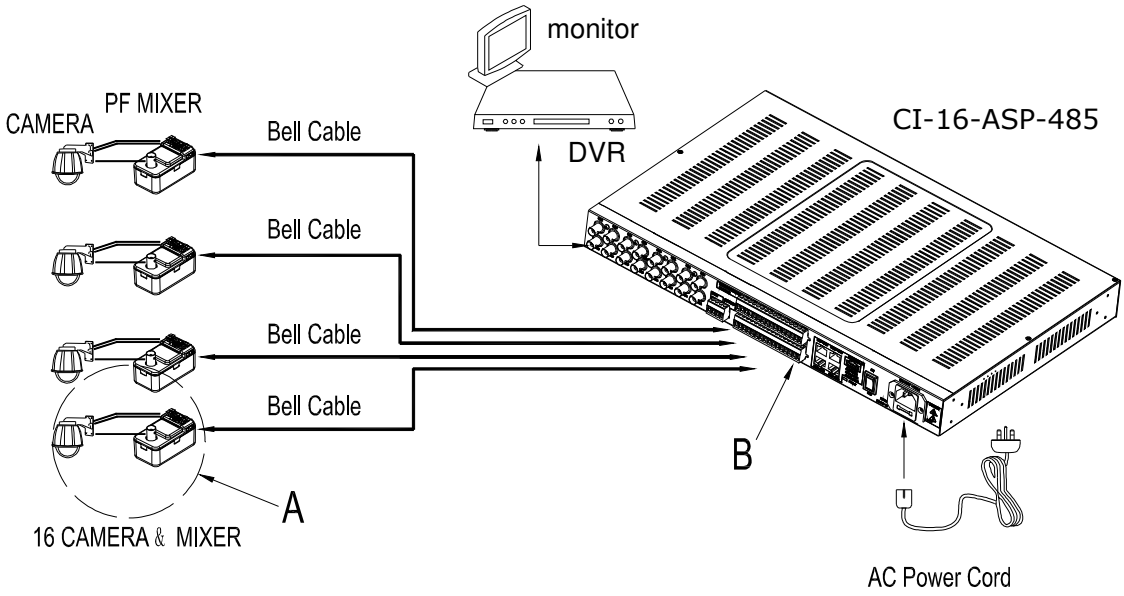


Fig. 5.4.1

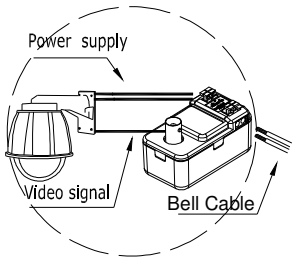


Fig. 5.4.2

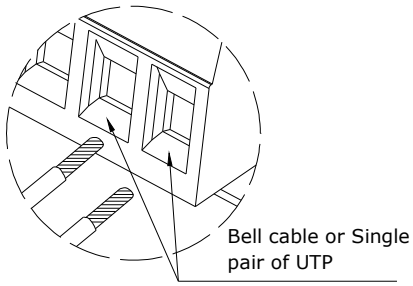


Fig. 5.4.3

Chapter 5 Methods of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power and Video* Transmission (continue)

Wiring Connections for each channel:

1. One end of the bell cable connects to one pair of the Video and Power 2-wire Terminals, ⑧ in Fig. 4.1.3 (on Page 12) of the Signal Processor at B of Fig. 5.4.1 and Fig. 5.4.3.
2. The other end of the bell cable connects to the corresponding Push-Fit Terminals of the Push-Fit Mixer marked "Connect to Signal Processor" at the Camera end as shown at A of Fig. 5.4.1.
3. A short length of bell cable is connected between the "DC Power to Camera" Push-Fit Terminals of the Push-Fit Mixer and the Camera, while a short length of suitable cable is connected between the BNC Plug of the Push-Fit Mixer and the Camera as shown at A of Fig. 5.4.1 and in Fig. 5.4.2.

.

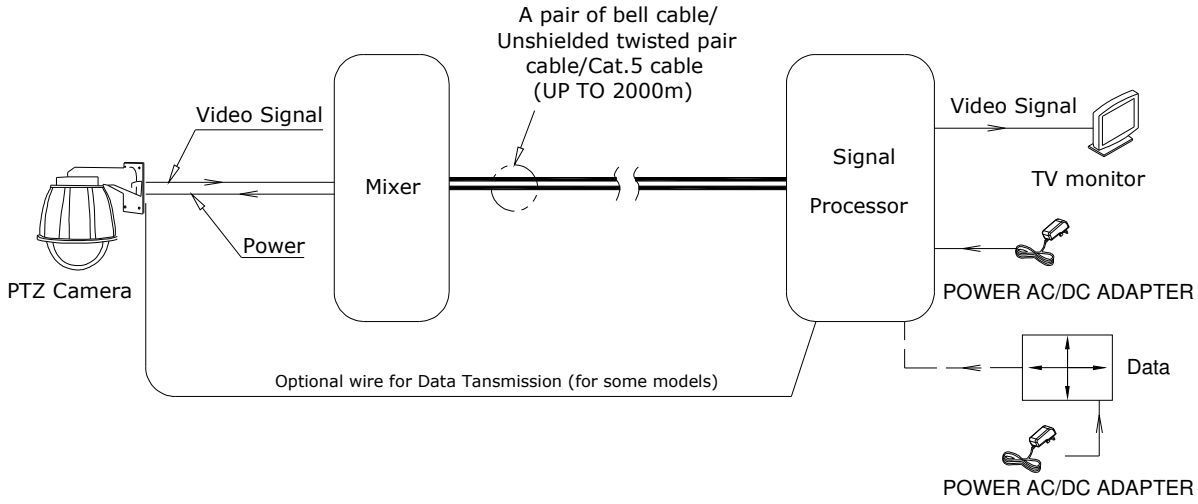
Wiring Connections for other channels:

4.. The wirings connections for other 15 channels are connected similarly as described in paragraphs 1 to 3 above.

Description of the Power Supply and Transmission of Video Signals

5. With the wiring connections described above, the Power Supply is provided from the built-in Power pack in the Signal Processor through the bell cable via the Mixer to the Camera. The Video Signals are transmitted from the Camera via the Mixer through the same pair of bell cable to the Signal Processor, and then through the corresponding Video Outlet – BNC Plug, ⑥ in Fig. 4.1.3 (on Page 12) for further connection to the DVR/Monitor as shown in Fig. 5.4.1.

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission



Transmission of Power, Video and Data using Cat.5 Cable or in combination with Bell Cable

Fig. 6.1

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

6.1 For Power, Video and Data Transmission *Using Cat.5 cable or in combination with bell cable*

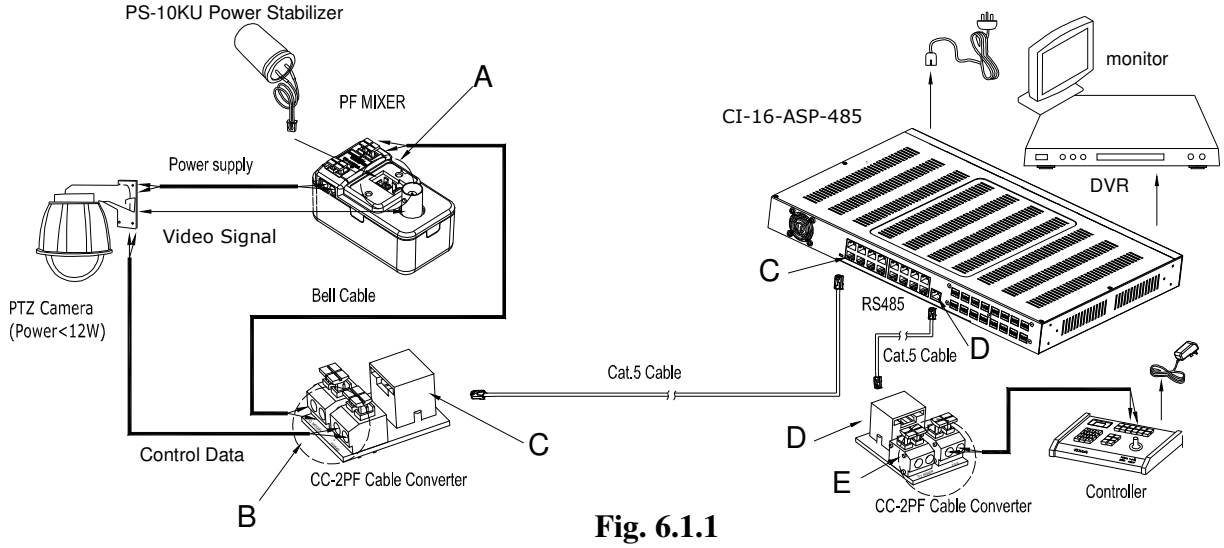


Fig. 6.1.1

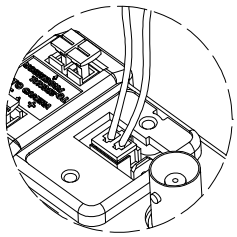


Fig. 6.1.2

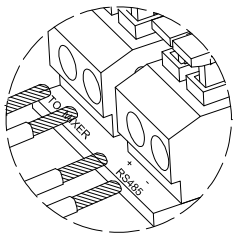


Fig. 6.1.3

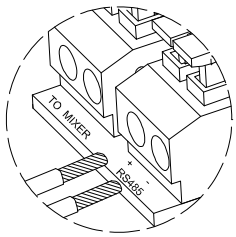


Fig. 6.1.4

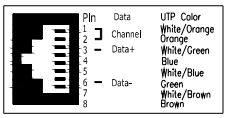


Fig. 6.1.5

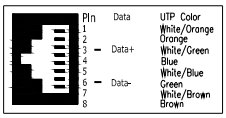


Fig. 6.1.6

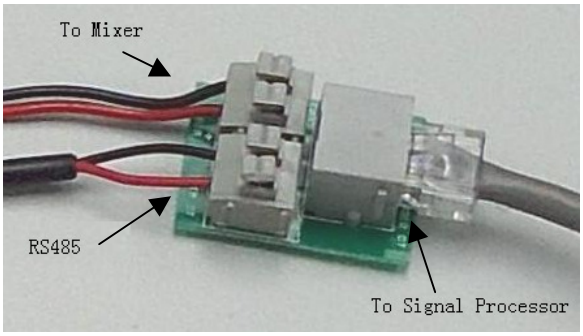


Fig. 6.1.7 CC-2PF Cable Converter

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

Wiring Connections for each channel:

1. One end of the Cat5 cable is connected to the RJ45 plug with one pair of the colour coded Cat.5 wire white/orange and orange connected to Pins 1 and 2 respectively (for transmission of Power and Video), and another pair of the colour coded Cat.5 wire white/green and green connected to Pin 3 and Pin 6 respectively (for transmission of Data) as shown in Fig. 6.1.5, and plugged into the corresponding RJ45 sockets, ③ in Fig. 4.1.1 (on Page 11) of the Signal Processor, as shown at C of Fig. 6.1.1.

2. At the other end of the same Cat.5 cable, the corresponding pairs of the matched colour Cat.5 wires for transmission of Power and Video, and Data are similarly connected to a RJ45 Plug mentioned in paragraph 1 above and plugged into the RJ45 Socket of the CC -2PF Cable Converter as shown at C of Fig. 6.1.1 and in Fig.6.1.7.

3. For transmission of Power and Video Signals through the CC-2PF Cable Converter and Mixer to the Camera, one pair of the bell cable is connected to the Push-Fit Terminals (as marked) on the Cable Converter mentioned in paragraph 2 above as shown at B of Fig. 6.1.1, and in Fig. 6.1.3. Another end of the same bell cable is connected to the "Connect to Signal Processor" Push-Fit Terminals of the Push-Fit Mixer. A short length of bell cable is connected between the "DC Power to Camera "Push-Fit Terminals of the Push-Fit Mixer and the Camera, while a short length of suitable cable is connected between the BNC Plug of the Push-Fit Mixer and the Camera.

4. For transmission of Data (RS485) to the PTZ Camera, one pair of the bell cable is connected to the Push-fit Terminals (marked "RS485") in the cable connection mentioned in paragraph 2 above as shown at B of Fig. 6.1.1, and in Fig. 6.1.3. Another end of the same bell cable is connected to the PTZ Camera.

5. For preventing the sudden surge of power during the starting of the system with PTZ Camera, it is recommended to install a Power Stabilizer in the Push-fit Mixer as shown at A of Fig. 6.1.1 and in Fig. 6.1.2.

Wiring Connections for other channels:

6. The wirings for other 15 channels are connected similarly.

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

Wiring Connections for Control Keypad:

7. For connection of the Control Keypad to the RS485 (Inlet RJ45 Socket) - item ④ in Fig. 4.1.1 (on Page 11) of the Signal Processor, the outlets from the Control Keypad (2-wires) connect to the Push-Fit Terminals of the "CC-2PF Cable Converter", as shown at E of Fig.6.1.1 and in Fig.6.1.4.

8. One short length of Cat.5 Cable with both ends connected to a RJ45 Plug respectively, having the colour coded wire *white/green* connected to Pin 3 and the corresponding colour coded wire *green* connected to Pin 6, as shown in Fig. 6.1.5.

9. Then one end of the short length of the Cat.5 cable, so connected is plugged into the RJ45 socket of the "CC-2PF Cable Converter" as shown at D of Fig. 6.1.1. The other end of the Cat.5 short cable is plugged into the RS485 (Inlet, RJ45 Socket, ④ in Fig. 4.1.1 (on Page 11) of the Signal Processor as shown at D of Fig. 6.1.1.

Description of Power Supply and Transmission of Video and Data Control Signals:

10. With the above wiring connection:-
    (1) The **Power Supply** for the cameras is provided from the Built-in Power pack in the Signal Processor through the respective pair of Cat.5 wire and RJ45 connectors to the relevant Cable Converter and then through the respective pair of bell cable to the individual Mixers and the corresponding Cameras.
    (2) The **Video Signals** from the Cameras via their respective Mixers are transmitted through the same respective pair of bell cable, the Cable Converters, the same respective pair of Cat.5 wire as for the Power Supply and RJ45 connectors to the Signal Processor, and then through the corresponding Video Outlet BNC Plug, ⑥ in Fig. 4.1.3 (on Page 12) of the Signal Processor for further connection to the DVR/Monitor as shown in Fig. 6.1.1.
    (3) The **Data Control Signals** are transmitted from the Control Keypad through the bell cables, Cable Converters, and Cat.5 wires to the Signal Processor and then from the Signal Processor through the relevant RJ45 connectors and Cat.5 wires to the respective Cable Converters and then through the bell cable to the PTZ Cameras.

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

6.2 Transmission of Video and Data for High Power PTZ Camera (Power > 8 W) with Local Power Supply and Fitting of Isolator to the Mixer and Isolator *Using Cat.5 cable or in combination with bell cable*

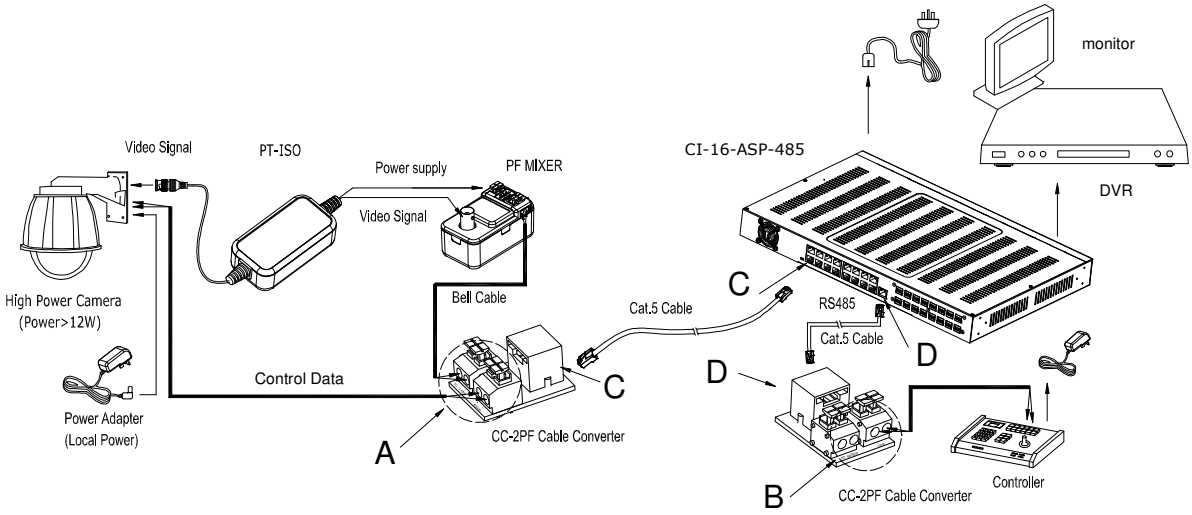


Fig. 6.2.1

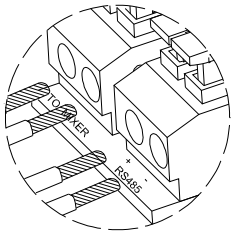


Fig. 6.2.2

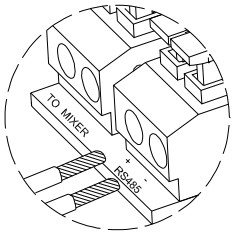


Fig. 6.2.3

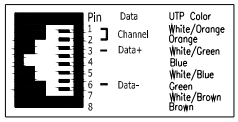


Fig. 6.2.4

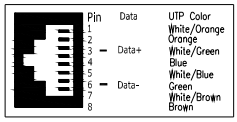


Fig. 6.2.5

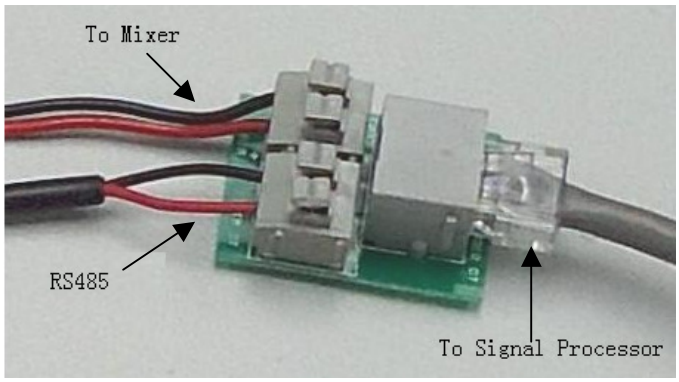


Fig. 6.2.6 CC-2PF Cable Converter

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

Wiring Connections for each channel:

1. One end of the Cat5 cable is connected to the RJ45 plug with one pair of the colour coded Cat.5 wire white/orange and orange connected to Pins 1 and 2 respectively (for transmission of Power and Video), and another pair of the colour coded Cat.5 wire white/green and green connected to Pin 3 and Pin 6 respectively (for transmission of Data) as shown in Fig. 6.2.4, and plugged into the corresponding RJ45 sockets, ③ of Fig. 4.1.1 (on Page 11) of the Signal Processor as shown at C of Fig. 6.2.1.

2. At the other end of the same Cat.5 cable, the corresponding pairs of the matched colour Cat.5 wires for transmission of Power and Video, and Data are similarly connected to a RJ45 Plug mentioned in paragraph 1 above and plugged into the RJ45 Socket of the CC-2PF Cable Converter as shown at C of Fig. 6.2.1 and in Fig.6.2.6.

3. For transmission of Power and Video Signals through the CC-2PF Cable Converter and Mixer to the Camera, one pair of the bell cable is connected to the Push-Fit Terminals (as marked) in the Cable Converter mentioned in paragraph 2 above as shown at A of Fig. 6.2.1, and in Fig. 6.2.2. Another end of the same bell cable is connected to the "Connect to Signal Processor" Push-Fit Terminals of the Push-Fit Mixer.

4. For eliminating the ground potential differences between Camera side and Signal Processor power point, an Isolator is installed between the Push-Fit Mixer and the Camera. From the two-outlet end of the Isolator, the 2-wire outlet is connected to the Push-Fit Terminals of the Push-Fit Mixer. Another outlet from the same end of the Isolator is connected to the Push-Fit socket of the Push-Fit Mixer for transmission of Video Signals. The outlet wire from the single outlet end of the Isolator is connected to the High Power Camera for transmission of Video Signals. The main power supply to the Camera is provided from a separate local power adapter.

5. For transmission of Data (RS485) to the PTZ Camera, one pair of bell cable is connected to the Push-fit Terminals (marked "RS485") in the Cable Converter mentioned in paragraph 2 above as shown at A of Fig. 6.2.1, and in Fig. 6.2.2.. Another end of the same bell cable is connected to the PTZ Camera.

Wiring Connections for other channels:

6. The wirings for other 15 channels are connected similarly.

Chapter 6 Method of Wiring Connections for 16 Channels Signal Processor CI-16-ASP-485 for *Power, Video and Data (RS485)* Transmission (continue)

Wiring Connections for Control Keypad:

7. For connection of the Control Keypad to the RS485 (Inlet, RJ45 Socket – item ④ of Fig. 4.1.1 (on Page 11) of the Signal Processor, the outlets from the Control Keypad (2-wires) connect to the Push-Fit Terminals of the "CC-2PF Cable Converter" as shown at B of Fig. 6.2.1 and in Fig. 6.2.3.

8. One short length of Cat.5 Cable with both ends connected to a RJ45 Plug respectively, having the colour coded wire white/green connected to Pin 3 and the corresponding colour coded wire green connected to Pin 6, as shown in Fig. 6.2.5.

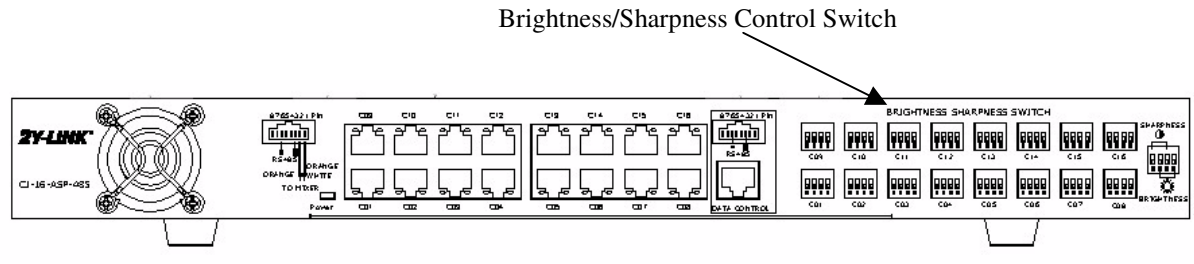
9. Then one end of the short length of the Cat.5 cable, so connected is plugged into the RJ45 socket of the "CC-2PF Cable Converter" as shown at D of Fig. 6.2.1. The other end of the Cat.5 short cable is plugged into the RS485 (Inlet, RJ45 Socket, ④ in Fig. 4.1.1 (on Page 11) of the Signal Processor as shown at D of Fig. 6.2.1.

Description of Power Supply and Transmission of Video and Data Control Signals:

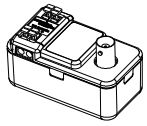
10. With the above wiring connection:-
    (1) The **Power Supply** for the camera is provided locally close to the High Power PTZ Camera (Power > 12 W). However, Power Supply is also provided from the Built-in Power pack in the Signal Processor through the respective pair of Cat.5 wire and RJ45 connectors to the relevant Cable Converter and then through the respective pair of bell cable to the individual Mixers and Isolator.
    (2) The **Video Signals** from the Cameras via their respective Mixers are transmitted through the same respective pair of bell cable, the Cable Converters, the same respective pair of Cat.5 wire as for the Power Supply and RJ45 connectors to the Signal Processor, and then through the corresponding Video Outlet BNC Plug - Item ⑥ in Fig. 4.1.3 (on Page 12) of the Signal Processor for further connection to the DVR/Monitor as shown in Fig. 6.2.1.
    (3) The **Data Control Signals** are transmitted from the Control Keypad through the bell cables, Cable Converters, and Cat.5 wires to the Signal Processor and then from the Signal Processor through the relevant RJ45 connectors and Cat.5 wires to the respective Cable Converters and then through the bell cable to the PTZ Cameras.

Chapter 7 Brightness / Sharpness (Colour) Control Switch Settings

7.1 Control Switch Settings on the following Mixer models for transmission distance up to 500m. (1,640 ft.)

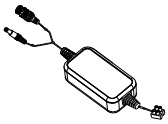


Push-Fit Mixers:



- **PF068A12 Universal Mixer** for up to 500m, DC 12V 680mA to camera
- **PF068A24 Universal Mixer** for up to 500m, AC/DC 24V 340mA to camera

Pig-Tail Mixers



- **PT068A12 Universal Mixer** for up to 500m, DC 12V 680mA to camera)

7.1.1 For wire length of less than 250 m (825 ft.) – (between the Mixer and Signal Processor)

The built-in automatic alignment circuitry is designed to provide the optimal high quality images in terms of Brightness and Sharpness (Colour) with all four Control Switches (Dip Switches) put to "LOWER" positions (ex-factory setting), as shown in Fig. 7.1.1.1. Therefore, no switch adjustment is required for wire length of less than 250 m (825 ft.) when this Signal Processor is with ex-factory setting and used with Mixer Models listed under paragraph 7.1.

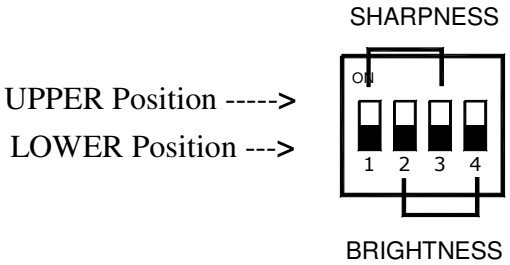


Fig. 7.1.1.1

7.1.2 For wire length between 250 to 500 m (820 to 1,640 ft.) - (between the Mixer and Signal Processor)

Depending on the choice of Camera, DVR, and Monitor, the users may wish to adjust the Sharpness (Colour) and Brightness of the images to suit their particular requirements.

To improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1 and 2 to "UPPER" position, as shown in Fig. 7.1.2.1.

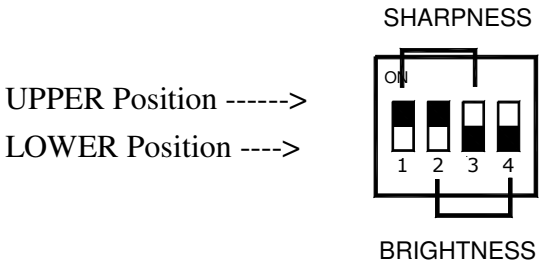


Fig. 7.1.2.1

To further improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1, 2, 3, and 4 to "UPPER" position), as shown in Fig. 7.1.2.2.

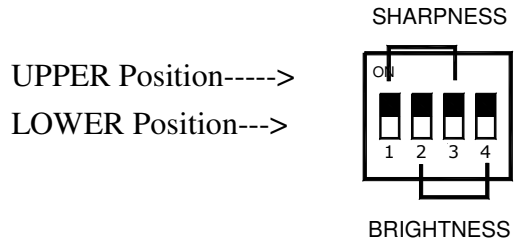
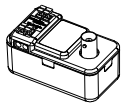


Fig. 7.1.2.2

7.2 Control Switch Settings on the following Mixer models for transmission distance 500 to 1,000m. (1,640 to 3,280 ft.)

Push-Fit Mixers:

- **PF068B12 Universal Mixer** for 500-1,000m, DC 12V 680mA to camera)
- **PF068B24 Universal Mixer** for 500-1,000m, AC/DC 24V 340mA to camera)



Pig-Tail Mixers

- **PT068B12 Universal Mixer** for 500-1000m, DC 12V 680mA to camera)

7.2.1 For wire length between 500 to 700 m (1,640 to 2,296 ft.) – (between the Mixer and Signal Processor)

The built-in automatic alignment circuitry is designed to provide optimal high quality images in terms of Brightness and Sharpness (Colour) with all four Control Switches (Dip Switches) put to "LOWER" positions (ex-factory setting), as shown in Fig. 7.2.1.1. Therefore, no switch adjustment is required for wire length of between 500 to 700 m (1,640 to 2,296ft.) when this Signal Processor is with ex-factory setting and used with Mixer Models listed under paragraph 7.2.

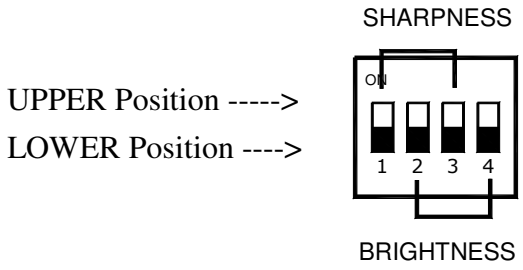


Fig. 7.2.1.1

7.2.2 For wire length between 700 to 1,000 m (2,296 to 3,280 ft.) - (between the Mixer and Signal Processor)

Depending on the choice of Camera, DVR, and Monitor, the users may wish to adjust the Sharpness (Colour) and Brightness of the images to suit their particular requirements.

To improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1 and 2 to "UPPER" position, as shown in Fig. 7.2.2.1.

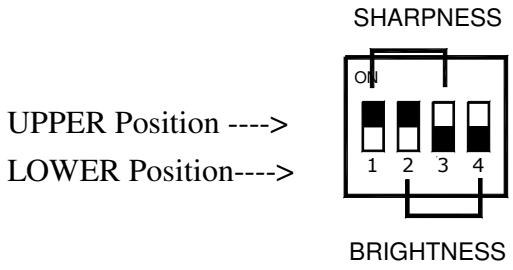


Fig. 7.2.2.1

Chapter 7 Brightness / Sharpness (Colour) Control Switch Settings (continue)

To further improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1, 2, 3, and 4 to "UPPER" position), as shown in Fig. 7.2.2.2.

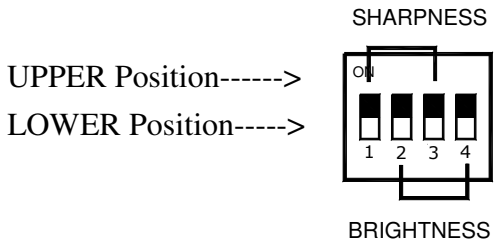
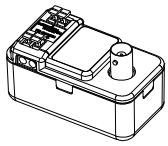


Fig. 7.2.2.2

7.3 Control Switch Settings on the following Mixer models for transmission distance 1,000 to 1,500m. (3,280 to 4,920 ft.)

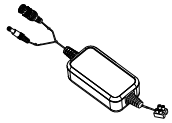
Push-Fit Mixers:

- **PF068C12 Universal Mixer** (1,000-1,500m, DC 12V 680mA to camera)



Pig-Tail Mixers

- **PT068C12 Universal Mixer** (1000-1500m, DC 12V 680mA to camera)



7.3.1 For wire length between 1,000 m to 1,200 m (3,280 to 3,937 ft.) – (between the Mixer and Signal Processor)

The built-in automatic alignment circuitry is designed to provide the optimal high quality images in terms of Brightness and Sharpness (Colour) with all four Control Switches (Dip Switches) put to "LOWER" positions (ex-factory setting), as shown in Fig. 7.3.1.1. Therefore, no switch adjustment is required for wire length of between 1,000 to 1,200 m (3,280 to 3,937 ft.) when this Signal Processor is with ex-factory setting and used with Mixer Models listed under paragraph 7.3.

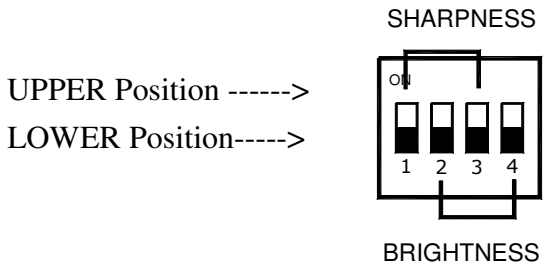


Fig. 7.3.1.1

7.3.2 For wire length between 1,200 to 1,500 m (3,937 to 4,920 ft.) - (between the Mixer and Signal Processor)

Depending on the choice of Camera, DVR, and Monitor, the users may wish to adjust the Sharpness (Colour) and Brightness of the images to suit their particular requirements.

To improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1 and 2 to "UPPER" position, as shown in Fig. 7.3.2.1.

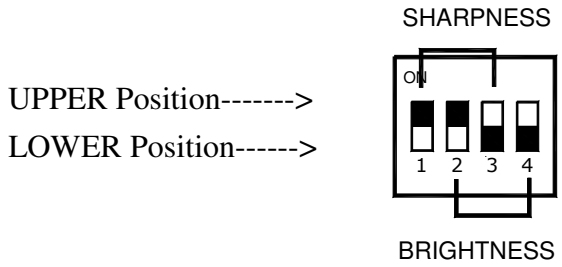


Fig. 7.3.2.1

To further improve the Sharpness (Colour) and Brightness of the images, put the Control Switches (Dip Switches) 1, 2, 3, and 4 to "UPPER" position), as shown in Fig. 7.3.2.2.

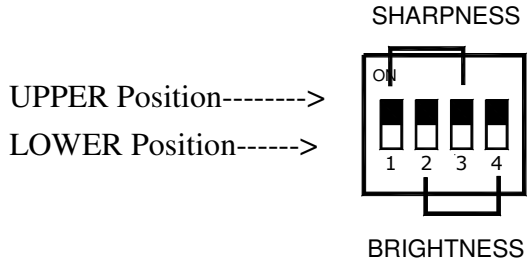
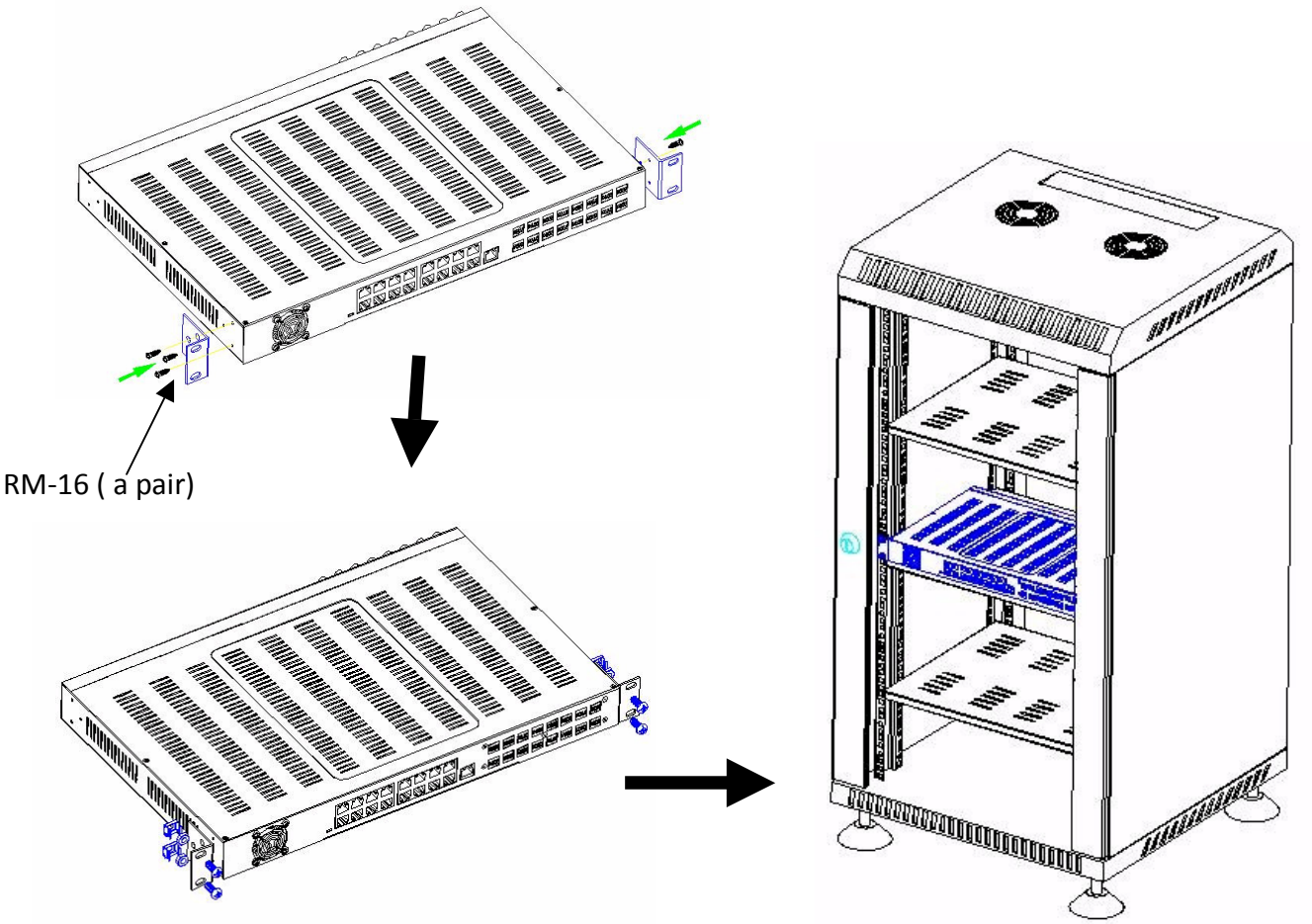
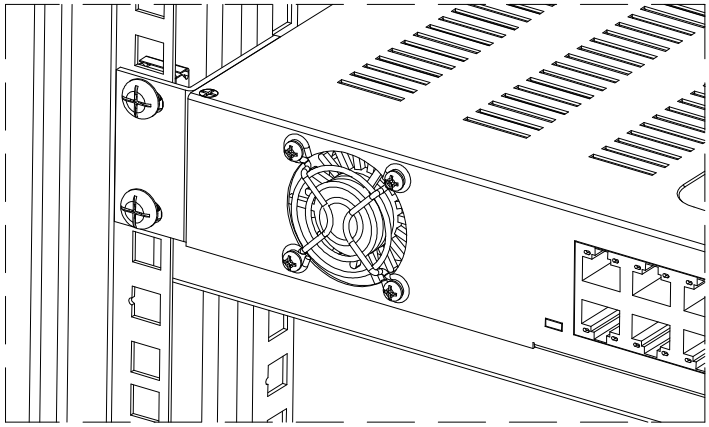
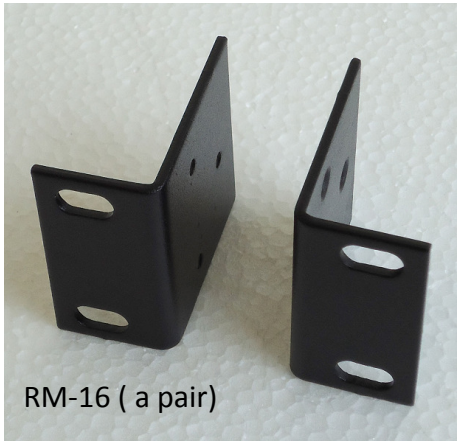


Fig. 7.3.2.2

Chapter 8 How to mount the Signal Processor to 19” rack







Chapter 9 Trouble Shooting

Problems		Possible Causes	Corrective Actions
1	No video signal; No colour picture; Pictures in irregular shape.	The power rating of the camera and /or the transmission distance do not match with the specifications of the Mixer specified on Page 10 of this manual.	To select suitable mixer model.
2	Picture brightness too bright or too dark.	The brightness / Sharpness (Colour) control switches (dip switches) are not put in proper positions.	To set the brightness / Sharpness (Colour) control switches (dip switches) proper positions (see guidance notes in Chapter 7 on Page 40-44 of this manual.
3	Pictures with irregular horizontal lines interruption.	Either the Camera or CCTV monitor is not grounded or not properly grounded.	To make sure both Camera and CCTV Monitor are properly grounded.
4	The LED lights in RJ45 sockets and Power indicator are on, but there is no picture shown on the monitor screen.	The signal processor video output cable or socket is not properly connected to the DVR or Monitor.	To make sure the signal processor video output cable or socket is not properly connected to the DVR or Monitor.
5	The monitor screen shows unsteady pictures when the control keypad is in operation.	Insufficient line current supply to the PTZ camera.	To fit a Power Stabilizer PS-10KU to the Mixer.
6	There is no movement of the PTZ Camera when the control keypad is in operation.	PTZ camera doesn't receive any control data signal from signal processor.	To check the RJ45 Pug for RS485 Data Controller is set on Pin3(+) and Pin6(-).
7	There are some moving horizontal lines on the CCTV monitor screen.	Due to potential differences between the Camera side and the Signal Processor power point when Local Power is provided.	To install a Ground Loop Isolator (PF-ISO/PT-ISO) together with the Mixer to eliminate the ground potential differences and stop the noise and humming sound.

LIMITED WARRANTY

- This product is warranted against defects in material or workmanship for the time periods
- Limited warranty covers only those defects that arise as a result of normal use of the product and does not cover any other problems, including those that arise as a result of: (i) improper maintenance or modification; (ii) parts or supplies not provided or supported (iii) operation outside the product's specifications; or (iv) unauthorized modification or misuse.
- SHALL NOT BE LIABLE FOR THE LOSS OR DESTRUCTION OF VIDEO IMAGE OR DATA RESULTING FROM THE USE OR SERVICE OF THIS PRODUCT, WHETHER DUE TO VIRUS ISSUES OR OTHERWISE, OR ANY FAILURE TO SECURE ALL VIDEO IMAGE AND DATA TRANSMITTED OR AFFECTED BY THE PRODUCT OR TO MAINTAIN THE CONFIDENTIALITY OF VIDEO IMAGE OR DATA TRANSMITTED.